

WIN A LOSI XXX—pg. 114

SNEAK PEEK HPI NITRO MT



RADIO CONTROL

car action

THE WORLD'S LEADING R/C CAR MAGAZINE

47380

5 Super Modified Machines you can build

page 97



TAMIYA TRUE-BLUE CLOB



TAMIYA WIDE-TRACK F-150



TRAXXAS INSANE NITRO BUGGY



MUGEN ULTIMATE PRIME 12

WORLDS-WINNING CARS
Masami's & Jukka's
factory rides

GETTING STARTED YOUR 10 MOST ASKED QUESTIONS ANSWERED

BOLINK CHEAP-SPEED DRAGSTER



TESTED TAMIYA $\frac{1}{8}$ MINI COOPER ■ KAWADA SV-10GT
■ DURATRAX MAXIMUM BX ■ RACETECH G-FORCE

10 PAGE SPECIAL THE HISTORY OF RADIO CONTROL—SEE HOW IT ALL BEGAN

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December 1999

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HPI RS4 Nitro MT, and our five
"project" vehicles: Tamiya
True-Blue Clod; Tamiya Wide-Track
F-150; Traxxas Insane Nitro Buggy;
Mugen Ultimate Prime 12;
Bolink Cheap-Speed Dragster.

Welcome to the Golden Age!



If you're like most RC hobbyists, you enjoy the time you spend at the workbench. Chances are, you're working on your car because you like to tinker or to extract maximum performance from it. It's safe to say your machine doesn't constantly need repairs just to stay in running order, and you certainly aren't tearing down your

radio to replace a blown diode or hacking together your own servos from mail-order kits.

Why do I bring this up? When you check out **"The Century of RC"**—our look at the history of the RC car hobby—you'll understand (or perhaps I should say "powered car modeling" hobby, since the spirit of RC was born before the term "radio-control" was ever coined). I can only imagine what it was like in those earliest days when spark-ignition tether racers with hand-fabricated chassis and hammered-aluminum bodies were the only way to enjoy scaled-down auto racing.

When RC did come along, the earliest cars relied on "escapement" systems that didn't offer proportional control and were hardly easy to operate. To steer, a single switch had to be flipped in a sequence: once for left turn, again for straight running, again for right. Drivers had to think a few moves ahead to drive with any degree of precision! Nearly every RC technology we take for granted today simply did not exist for the early RC faithful. Soft-compound tires? Solid-state speed controls? Oil-damped suspension? All were just flights of fantasy for those pioneering modelers, yet I can understand why we stuck with the hobby despite the technological stumbling blocks: nothing compares with the sense of achievement—and sheer fun—you get when you see your creation pull away under its own power and completely under your control. As we head into the next millennium, the RC car hobby is in a golden age of convenience, reliability and performance.

As much fun as it is to look at where we've been, *Radio Control Car Action* is always on the lookout for what's new; this month, we examine the latest low-buck



competition touring car, the **Kawada SV-10GT**, and the newest in ready-to-run off-road RC: the **DuraTrax Maximum BX**.

Those of you who liked the articles we've done about tricked-out Traxxas trucks and hopped-up HPI Nitro RS4s

will want to turn directly to **Project Gallery**, which features five wild creations that include everything from dragsters to monster trucks. We'll revisit "Gallery" with other cars, so send us ideas for "Project" cars you'd like to see!



There's plenty more good stuff in this last issue of 1999, so I'd better let you get to it. See you next month, when we look at the next 100 years; what will we be driving then?

Peter Vieira

Executive Editor

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New to Nitro

I really enjoyed the "RTR Nitro Truck Shootout" in your October issue. I am seriously thinking about buying one of these awesome vehicles. I looked at the Maximum ST and the Kyosho Sandmaster. The Max seems to



have more "gotta-have" features, such as aluminum body, oil-filled shocks, aluminum chassis and slipper clutch, but the Sandmaster seems a little more reliable and beginner-friendly. I know the Max outperforms the Sandmaster, but I am a beginner nitro trucker, and I want a reliable vehicle to learn with. I have been in the electric scene for about two years, so I'm no dummy, but I have never tried my skills with a nitro vehicle. Which truck would better suit my needs? **TRAVIS WEISENBORN**
Byesville, OH

And the award for most mature and thoughtful approach to buying a truck goes to—Travis Weisenborn! It's an understatement to say you're "no dummy"; you have the insight to understand that the vehicle we pick as our favorite in a Shootout might not be best for everyone's taste or needs. It's fun to pick a winner, but a handful of magazine editors can't represent the entire hobby market. Make your own choices!

Now, about your choice, Travis: it sounds as though your purchasing decision is based on avoiding a cranky engine, so you are wise to add the Sandmaster to your list. The Kyosho engine included with the truck is very reliable and beginner-friendly, and it definitely has the power to turn a bigger clutch bell if you want to gear the truck for higher speeds. If I had to suggest a best engine for easy starting and reliability, it's tough to beat the Kyosho.

—Pete

Leave Chris Alone

I've been reading *RC Car Action* for 2½ years, and one "thing" keeps coming up: it seems you guys don't appreciate Chris Chianelli's input! It's as if you don't like him! (For example: "Get out of my hair, Chris!"; "I'm still faster than Chianelli.") So, I am writing to say this to Pete, Greg and George: "Guys, lighten up on Chris a bit, eh? He may have a weird car and a funny hairdo, but that's no reason not to be nice!"

Chris's humor and insight make the mag more enjoyable! Not only that, but his "Back Lot" provides hilarious and serious sessions of reading. And, hey, he has a dog named Luna! Isn't that worth some credit for originality? [email] **AARON J.**
Saskatoon, Saskatchewan, Canada

Aaron, we tease Chris *because* we like him, and here at *RC Car Action*, we show mutual respect with mutual *dis*respect! When you hang out with your friends, do you say things such as: "Good afternoon there, old chum; you're looking fine in those slacks. Would you like to play a friendly game of Gran Turismo?" or do you say, "Wassup, monkey boy? Ready to pit your pathetic skills against me in Gran Turismo?" Bottom line, it's all in fun. Don't worry about Chris; he can give as good as he gets.

—Pete

Leave Pete Alone

In the September issue of *RC Car Action*, Steve P. and Chris C. say "... in a package that is small enough to pilot around the office or home without doing too much damage (unless Pete V. drives it)." Do you drive as badly as they say, or are they jealous? Do they ask you before they print a remark like that, or is it a surprise when you read the final copy? [email] **MIKE ROZNOWSKI**

OK; forget everything I said in my reply to Aaron. No one makes fun of my driving. NO ONE! Those guys are no longer my friends!

I admit, I do hack brutally on cars, and broken parts make me smile. After a wreck, I'm like, "Dude, check out *this* shock tower!" So Chris and Steve can have their fun; but if you see Chris, ask him about the time he let Steve drive his ¼-scale car. That's a great tale of hack ...
—Pete

More T3, Please

When will you take another look at the Associated T3 and list all the upgrades?
STEVE JACKSON
Eagan, Minnesota

Check out the June '98 issue, and you'll see a "Shootout" with a totally tricked out Associated RC10T3 and the Team Losi Double-XT Graphite Plus. If that doesn't satisfy your trick truck needs, nothing will. To order the issue (or any back issue), call (800) 877-5169.
—Pete

Traxxas Rules!

What were you guys thinking? That the DuraTrax Maximum ST won your truck comparison is preposterous. I have been a loyal Traxxas buyer for four years and have owned almost every Traxxas vehicle: Radicator, Radicator 2, Hawk 2, TCP, SRT, Rustler, Stampede, Bandit, 4-Tec, Nitro Rustler, Nitro Stampede, Nitro



Hawk, Nitro Sport, Nitro Street, Nitro Buggy, and Nitro4-Tec (that's just off the top of my head). Every time Traxxas brings out a new product, it's on my must-have list. They just get better and better. About a month ago, I took a short departure from my Traxxas loyalty and bought a Maximum ST. The quality of this truck is not nearly up to par with what I am used to. Your claim that the Maximum ST was the easiest to operate is the biggest load of bull I ever read. What could be easier than push-

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

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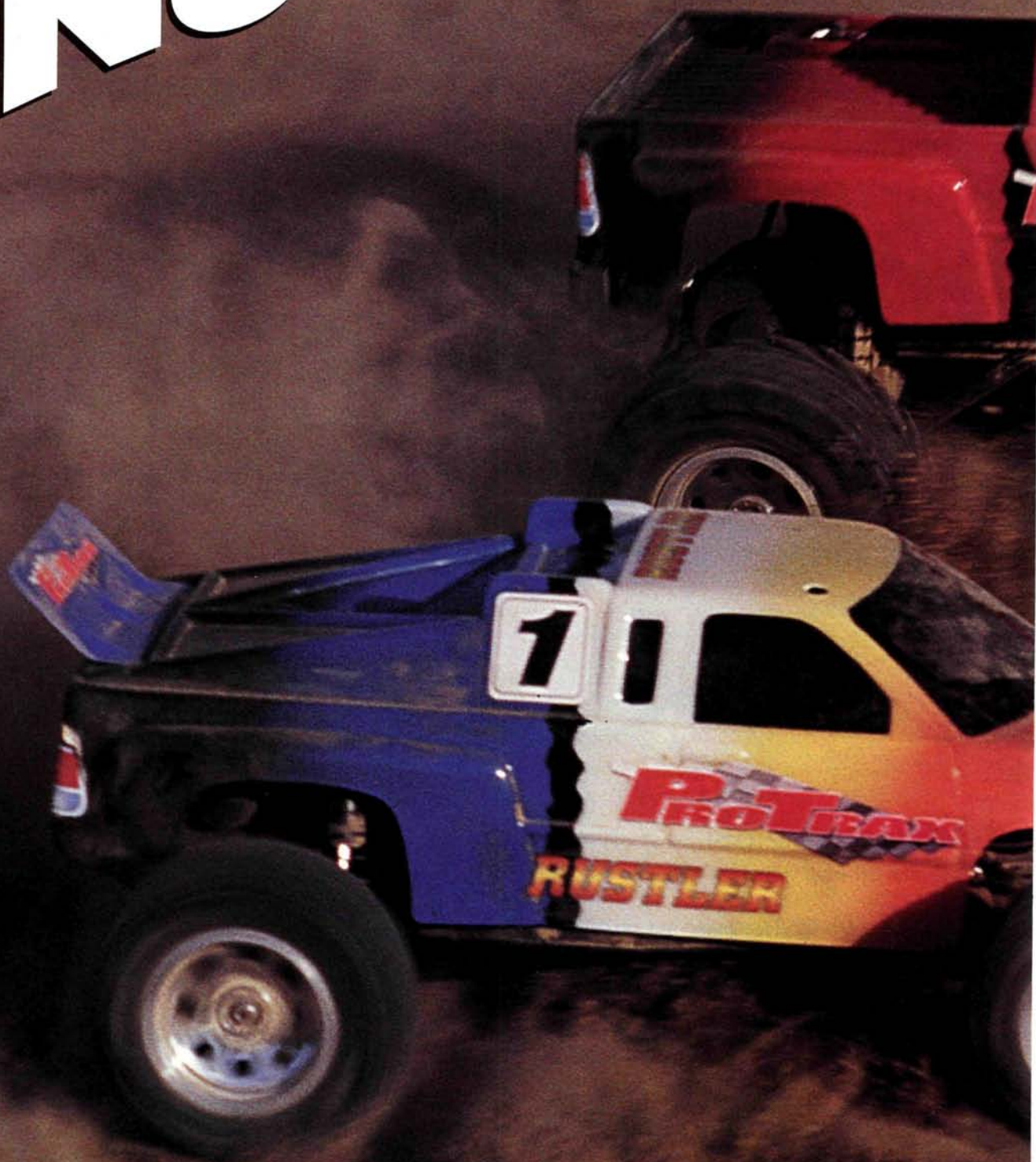
ing a button that turns the motor over and lights your glow plug? Believe me when I tell you that the first thing a kid will do with a pull-start engine is yank it like a lawnmower and break the cord. Next comes 10 minutes of crying and 30 minutes of rewinding the spring and attaching more rope, so your claim of 5 minutes box-to-backyard time is absurd for the average kid. The only redeeming quality of the October issue was that you named the Nitro 4-Tec "Car of the Year." Not much choice there, though. With its 50mph out of the box, it revolutionized ready-to-run cars. But that doesn't take away from you guys selling out in the truck category. You lost credibility on this one. [email] **MARK J. KOZAK**

Mark, tell us how you *really* feel! It's funny; when we first started saying Traxxas vehicles were competitive, our credibility was supposed to be shot then, too! Irony. Here's the real deal: we call 'em like we see 'em. When we added up our scores, the DuraTrax truck won; it was that

simple. Since scores aren't everything, we included our personal picks, and both Greg Vogel and George Gonzalez felt Traxxas came out on top. No one doubts that Traxxas trucks are great. Don't confuse "telling it like it is" with "telling it the way everyone thinks it should be." We report our experiences with the products we test. You don't have to agree! Thanks for caring enough to write (I'll tell my friends at Traxxas that they should send you a T-shirt or something!).

—Pete

**No Paintin'
No Waitin'!**



WITH THE NEW PRE-PAINTED PROTRAX RUSTLER AND STAMPEDE RTR'S, YOU'LL GET BOTH UNMATCHED PERFORMANCE AND DAZZLING GREAT LOOKS — RIGHT OUT OF THE BOX.

Now, ProTrax offers Traxxas-built trucks the way you really want 'em — with colorful, five-color painted bodies, electronic speed controls — even jazzy new wheels. They're the hot setup for getting started!

And these trucks ain't just powder puffs, either. When it comes to performance, they rock!

Fact is, the Stampede earned *Car Action's* coveted "Reader's Choice" award.



Plus, in an electric Monster truck shootout, not only was it the fastest of all tested, but it was top-in-its-class for durability, climbing capability and quality.

Race truck animals will rule with the Rustler. Everything about it — the channeled, fiber-composite double-deck chassis, Magnum[®] transmission, Stinger 20-turn race motor, planetary diff and extra long oil-filled shocks just scream "race me."

And racing is exactly what you'll be doing — in no time — with these trucks. While your batteries are charging, add a few stickers to create "your" custom look, and you're ready to conquer all who dare to take you on!

ProTrax. Why run anything else? You'll find 'em in better hobby shops and racetracks nationwide.

Smooth juice! ProTrax trucks power up with the kind of proportional feel only an electronic speed control can provide. Yes, they go in reverse, too! What else would you expect from these primo trucks?



Whoa! What selection! There are as many as four different colors so you can keep 'em apart when racing with your buds.

PROTRAX

www.protraxrc.com

Exclusively distributed by Horizon Hobby Distributors Inc., 4105 Fieldstone, Champaign IL 61822. ProTrax products are manufactured by Traxxas Corp.

TAMIYA "SUPER BEETLE"

I wish I could tell you that Tamiya is planning to sell this race-prepped, ITCC-theme Beetle, but it's just something the in-house gear heads at Tamiya USA cooked up for their own giggles. Of course, if you'd like to buy one, letting Tamiya know couldn't hurt! If any of you other manufacturers have a "concept car" you'd like to show off, let me know; if the full-scale world can show off its fantasy machines, so can you!

Tamiya America Inc., 2 Orion, Aliso Viejo, CA

92656-4200; (800) TAMIYA-A; fax (949) 362-2250;

www.tamiya.com.



BY CHRIS CHIANELLI

TRINITY'S HOOP DREAMS

You can have the aerodynamic benefits of dish wheels with the great looks of a 16-spoke racing wheel when you bolt on these new touring car rims from Trinity. The Lexan shields fits the rims precisely, and the wheels are stiff enough for the tightest turns and hairiest horsepower. They fit all 12mm hex hubs and won't pull the hexes off your Kyosho axles (I hate it when that happens). Trinity tells me the production rims will be white instead of black, but hey, if you like black, dye them!

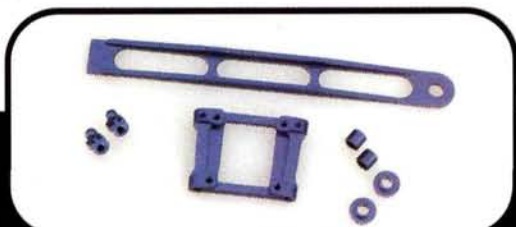
Trinity Products Inc., 36 Meridian Rd., Edison, NJ 08820; (732) 635-1600; www.teamtrinity.com.



With its "XXX" name, it should be blue!

Since Team Losi released the Triple-X, it's hard to resist lame "adult entertainment" references. I promise, I'll stop after this! For those of you who aren't satisfied with "just" a stock Triple-X, Trinity offers these artfully machined hop-ups. The battery brace will keep that pack in place no matter what, and the rear arm mount adds glitz as it increases strength. The widgets on the left are aluminum body mounts, and the widgets on the right are bearing spacers, which any racer will tell you are must-haves if you want tight wheels (but not tight bearings).

Trinity Products Inc., 36 Meridian Rd., Edison, NJ 08820; (732) 635-1600.



Hoping to Slash the Competition?

Pro-Line's new Slash Series tires for buggy rears and 4WD fronts were specifically designed for hard-packed tracks on which dust build-up and outside racing-line-debris must be dealt with. Born of new and existing technology, Slash Series tires combine the small pins and pin spacing design of current Pro-Line tires with the newly developed angled and slotted bar-tread technology, which yields greater side bite. The tires also have reinforced interior webbing with low-profile sidewalls and a redesigned carcass. They fit all 2.2-inch standard and wide rear wheels and standard 4WD front wheels.

Also new from Pro-Line are three new buggy front tire designs that include a wide 4-rib, wide Blade and wide Radius-Rib designs. During their debut at the IFMAR World Champs in Rauma, Finland, these tires stole the show as Mark Pavidis TQ'd running the Radius Rib, and Masami Hirotsuka went on to win his 10th IFMAR World Championship on this new tire. The wide 4-rib was designed for loamy and dusty hard-packed tracks while the Blade and the Radius Rib are intended for high-bite, blue-groove tracks.

Pro-Line/Jaco, P.O. Box 456, Beaumont, CA 92223; (909) 849-9781; fax (909) 849-2968.

You can see the difference between the Radius Rib and Blade designs by looking at their center ribs. On the Blade, they're squared off; the Radius Ribs are rounded (radiused—get it?).



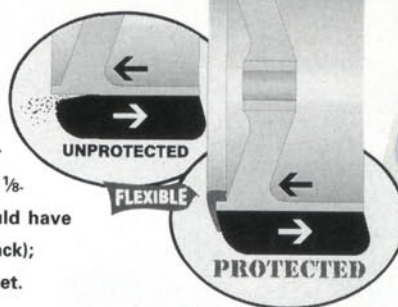
INSIDE SCOOP



NO MORE ONE-RUN TIRES!

Don't you hate it when your car comes off the track with wasted rubber just because of one board tap? Kiss that hassle goodbye with Tire Savers—flexible rubber rings that snap onto a rim to protect the sidewalls of your 1/8- or 1/10-scale gas on-road machines. I bet Tire Savers would have paid for themselves after a tank of fuel (or less, if you're a hack);

www.tiresaver.com tsaver@ibm.net.



Better Battery Dumping

Pro-Match's Smart Tray II features seven LEDs to show cell contact and discharge status and has larger, easier-to-turn thumbscrews. You can buy a "standard" version (negative pole in the upper left corner) or a "reverse" version (positive pole, upper left). Handy.

Before you "tray" your pack, dump off the extra volts with the Pro Switch. It was redesigned to pull your pack down to 3 volts before it pulls the plug. According to Pro-Match, this lower cutoff helps to reduce internal resistance when it's used with the Smart Tray II and, like the tray, it can be used with 4- and 6-cell packs.

Pro-Match Competition Batteries, 2033 S. Palo Verde Blvd., Lake Havasu City, AZ 86404; (520) 855-2226.



Sticky Stuff

*Now Available, The Same
Glue Brian Uses To Put
His Multi-Stage Inserts
Together And To Glue His
Tires To The Rim!*



TK3701 Bead Loc Thick
Slow Drying, \$7.50

TK3700 Bead Loc Thin
Fast Drying, \$7.50

TK3504 The Bomb
Insert Glue, \$7.50

www.teamtrinity.com

TEAM Kinwald TRINITY

Simple Light & Fast

The new Nitro Racer is Bolink's approach to parking-lot racing. Their formula combines the simplicity and lightness of a pan chassis and the muscle of nitro power. Now, there's a formula I can relate to—simple, light and fast! Because it's 20 to 25 percent lighter than a sedan car and has the low drive-train drag of a spur/pinion, direct-drive setup, this thing should prove terribly fast. It's designed to fit most .12 engines and Associated or Losi clutch parts. The kit features rigid G10 chassis, aluminum motor plate and axle blocks with adjustable ride height, disc damper and VCS macro shock, fiberglass throttle plate with throttle and brake linkage, eight ball bearings, Associated "strut" front end, Kydex bumper and nerf wing and adjustable tie rods and servo-saver. Dimensions: wheelbase—264mm (10.4 inches); width—203mm (8 inches).

THEY COST HOW MUCH?

My friends, you are looking at a pair of \$100 pliers! Checkpoint makes these high-end stainless-steel beauties for the fishing market, and they're pretty trick. They have: comfy rubber grips; replaceable tungsten-carbide cutters (meant to cut stainless-steel

line, so you know they'll easily blast through silicone wire); a solid-brass, machined sleeve bearing that won't corrode; titanium-carbide-alloyed jaws; and the nifty belt sheath shown here. If you have a Pentagon-style tool budget, pick up a set.

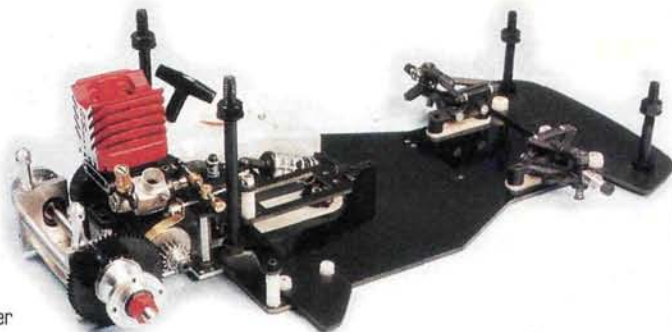
Donnmar Enterprises, 2111 SE Columbia Way, Ste. 100, Vancouver, WA 98661; (360) 694-7980; fax (360) 694-7969; fishwithus.net/checkpoint.



Snake Bite Backs Up

Kyosho now offers a 4WD, 1/10-scale licensed replica of the full-scale Snake Bite monster truck with the Quick Reverse Clutch (QRC) system. Externally, the truck features "3D" fangs, red eyes and a snakeskin texture for that "snaked-out" look; internally, the Snake features 2mm aluminum chassis, pull-start GS-11X engine, center shaft-drive tranny with two gear diffs, double-wishbone suspension, oil-filled shocks and a QRC system that has been extensively tested for that slam-bang back-and-forth driving monster trucks seem to encourage.

Great Planes Model Distributors, 2904 Research Rd., P.O. Box 9021, Champaign, IL 61826-9021; (800) 682-8948; fax (217) 398-0008.



Also shown here are Bolink's new, 1/10-scale 2000 Ford Taurus and 2000 Monte Carlo stock-car bodies. Both are available in 0.040-inch standard thickness and 0.030-inch Pro-Lite Lexan. Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30045; (770) 963-0252; fax; (770) 963-7334; www.bolink.com.

FM ON A BUDGET

Futaba now offers the budget-price Magnum Junior in an FM version designated the "2PEKA." Other than the new modulation mode, the new 2-channel transmitter is the same as the AM Junior and features throttle ATV, servo-reversing and steering dual rates. To receive the FM signals, the radio is supplied with the 3-channel R123F mini receiver. The 2PEKA also includes two S3003 servos to handle most 1/10 vehicle needs.

Futaba Corp. of America, P.O. Box 19767, Irvine, CA 92723-9767; (949) 455-9888; fax (949) 455-9899; www.futaba-na.com.



HPI



AUDI A4 SAVANT BODY

Check out this racy A4 Avant for that "something different" on race day. The high-mounted wing, masking film, cut window masks and all the decals you need to style it out are included—the usual HPI features.

HPI 15321 Barranca Pky., Chino, CA 92618; (714) 753-1099.

3-SERIES BMW

The popular Baby Beemer comes to RC with HPI's latest 190 and 200mm shells. All the decals you need to bring it to life are included, and body-mount dimples make it easy to drop onto your RS4 Pro 2. Factory-applied masking film prevents you from overspraying and assures you of that magic moment when you peel off the film to reveal a gleaming, shiny body. I love that! Vinyl window masks ensure fast finishing, and HPI's prototype Type R5 chrome wheels are also shown. Ask for body no. 7302.

HPI, 15321 Barranca Pky., Irvine, CA 92618; (949) 753-1099; fax (949) 753-1098; www.hpiracing.com.



THE BEST RC '57 CHEVY EVER!

Parma's new multi-piece 1957 Chevy Bel Air body is the classiest classic ever sucked over a mold. As you can see, the nose clip, main body and rear valance have all been separately molded, and that allows Parma to capture the intricate grill detail and undercut rear fins. Even with only a quick, one-color paint job (thanks to Bob Hastings, my bud down the hall at *Model Airplane News* magazine), the Parma Chevy is a beautiful ride.

Other new goodies from Parma include the 4x4, Search and Destroy and Eruption decal sets and "carbon-fiber" decal sheet for that high-tech look (the sheets shown on the right actually measure 8.5x11 inches).

Parma/PSE, 13927 Progress Pky., North Royalton, OH 44133; (440) 237-8650.



DRY-CELL GLOW STARTERS

Though dry-cell glow starters are far from new, the metal types we're familiar with seem to be plagued by self-discharging problems. OFNA says that this problem has been solved with its new plastic-body units that are non-conductive, durable and inexpensive. OFNA's plastic glow starters are available in D- and C-cell sizes.

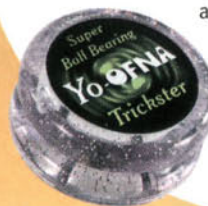
OFNA Racing, 22692 Granite Way, Ste. B, Laguna Hills, CA 92653; (949) 586-2910; fax (949) 586-8812.



UPS AND DOWNS AT OFNA

It's another "yo-yo-meets-RC" scenario, as OFNA hits the hobby shops with this disco-fied toy that will literally light up your life. A tiny battery and a red LED illuminate the clear-and-glitter yo-yo when you spin it (there's a centrifugal switch inside), and a ball-bearing setup

allows the Yo-OFNA to sleep like Rip Van Winkle. Greg Vogel, office yo-yo master, tried it and liked it. I tried a few tricks myself and broke a vase.



a la

TEAM **Kinwald**

TK5008	Blue Aluminum Battery Strap	\$19.99
TK5009	Blue Aluminum Lower Front Bulkhead	\$29.99
TK5010	Blue Aluminum Upper Servo Brace	\$29.99
TK5011	Blue Aluminum Rear Body Mounts, 1 Pair	\$17.99
TK5012	Blue Metal Flake Graphite Front Shock Tower	\$15.99
TK5013	Black Kydex Transponder Mount	\$2.99
TK5014	Blue Aluminum Shock Bushings, Front And Rear	\$7.99
TK5015	Blue Aluminum 0 Degree Rear Pivot Blocks	\$29.99
TK5016	Blue Aluminum 2 Degree Rear Pivot Blocks	\$29.99
TK5017	Blue Aluminum Servo Mounts, 1 Pair	\$19.99
TK5018	Blue Front Brace With Sway Bar Mount	\$11.99
Front suspension brace with slot that fits XX front sway bar wire.		
TK5019	Blue Adjustable Rear Sway Bar Mounts	\$14.99
Uses Losi sway bar wires. Adjustable to easily change wire length to fine tune your handling without changing the wire diameter.		
TK5020	One Piece Rear Wing Clip, 3 Pieces	\$4.99
Special long blue clip that goes through both the rear wing mounting posts.		
TK5022	Blue Aluminum Motor Plate, Same As In Kit	\$10.99
TK5023	Blue Aluminum Heatsink Motor Plate	\$25.99
TK5024	Blue Aluminum Screw Kit	\$18.99
TK5025	Blue Aluminum Axle Bearing Spacers, 4 Pieces	\$9.99
TK5026	Blue Aluminum Rear Arm Brace	\$8.99
TK5027	Blue Aluminum Slipper/Shock Wrench	\$21.99
Allows slipper adjustments without removing the rear tire. Tightens shock mounting nuts without scratching shock body.		
TK5028	Blue Titanium Tie Rod Set	\$26.99

www.teamtrinity.com

TRINITY

Send a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, *RC Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we choose to feature your creation, you'll receive a free Radio Control Car Action decal sheet. You'll also be eligible to win a \$500 gift certificate from DuraTrax in the ninth annual "Readers' Rides of the Year Contest" in the fall of 1999. In case we need to contact you, write your address and phone number on your letter and on the back of every photo you send. Good luck!



Tall Rider

This Tamiya Clod Buster was built by San Diego's Le Phuung. Like many other Clod enthusiasts, he just couldn't leave his truck stock, so he built it using JPS and New Era chassis components. The gearboxes and rims are from JPS. New Era supplied the bumper, and a custom skidplate was fabricated for Le's truck. It also features an Airtronics high-torque servo, Associated shocks, GPM shock reservoir, Bigfoot body, blue titanium turnbuckles and several blue-anodized parts.

Radical Racer

This HPI RS4 Pro belongs to Greg Raciti of Mohegan Lake, NY. Custom hop-ups include front upright braces made with titanium tie rods and HPI balls and cups along with a custom roll cage made from aluminum tube. Power comes from a Trinity D3 17-turn motor, and the car is controlled by a Futaba Magnum PCM 3-channel radio. Other features are a Novak Hammer Pro ESC, Parma interior kit and headlight decals, Kawada 8-mesh rims and Pro-line V Rage tires—all topped off by a GTR-1 Parma body. Greg painted it to replicate the 1997 Panoz Le Mans.



Snowbound

This powerful-looking truck was built by Matt Yunker of Joliet, IL. Electronics include a 14-turn double modified motor, DuraTrax M5 ESC, 10-cell, 1700mAh batteries, Futaba S9304 servo and Futaba AM radio gear with inboard antenna. Other hop-ups: full ball bearings, slipper clutch, custom-fit Trinity motor heat sink, Associated gold shocks, MIP gold shock shafts, HPI wheels and a Bolink S-10 body. The quick-release wheelie bar and snowplow are both custom-made.



Father and Son

George Bailey of Virginia Beach, VA, races these cars with his 7-year-old son, George Jr. From left to right: Team RC10T3 with a Jeff Gordon paint scheme and Cyclone ESC; Associated Team Edition RC10T2 with Mark Martin scheme and Tekin Rebel ESC; Traxxas Stampede with Bigfoot body and Tekin Rebel ESC; and Bolink Sport 2000—narrowed to fit the Jeff Gordon body. All the cars have full ball bearings and stock motors and are controlled by Futaba Magnum Junior radios. Pro-Match RC 2000 batteries help to power the four NASCAR-theme machines.



DURATRAX

THE LEADER IN AWESOME RC
READERS' RIDES

Traxxas Triplets

Scott Holder of Belleville, IL, owns the no. 11 Traxxas Nitro Stampede, and his friends Marty and Donovan own the other two. Scott added hop-ups such as an MIP 360 Stinger exhaust, MIP Shiny CVD kit, Traxxas Big Bore shocks, 40WT shock oil and heavy-duty springs. Completing his truck is an RPM front bumper, RPM 6-spoke "Claws" rims, ESP sealed-bearing set, Traxxas graphite tie-bar, Motor Saver heavy-duty air filter, Trinity aluminum shock mounts and more. Scott calls himself an "overboard RC racer"; we agree!

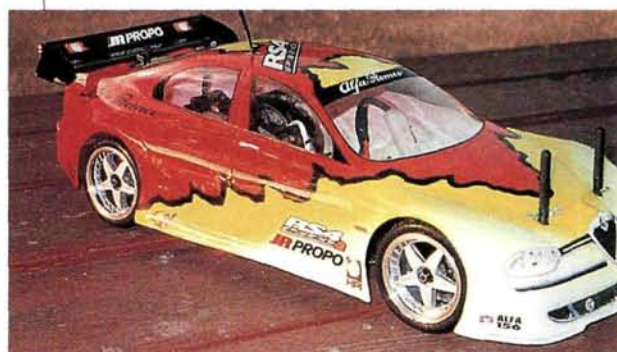


Comin' Through!

Sean Gottlieb of Moraga, CA, built this imposing Tamiya Juggernaut. It's powered by two Trinity Speed Gem 19-turn motors and also features a Novak Super Rooster ESC and a Futaba 9402 servo. Hop-ups include a Tamiya headlight/fog-light set, eight oil-filled shocks and Deans Ultra plug connectors. Nice work, Sean.

Texas Spice

Brownsville RC enthusiast Eloy Valles calls this HPI RS4 "Hot in Texas." It's powered by a Trinity Speed Gem 14-turn motor with Robinson Racing 48-pitch gears and topped off with an Alfa Romeo 156 shell from Hot Bodies. Other goodies include JR Racing R200 receiver, Z250 servo, DuraTrax Blast ESC, HPI V-Groove Super Radials and Kawada VX wheels. Juice comes from a DuraTrax RC-2000 pack, and the car is kept under control with a JR-R1 radio.



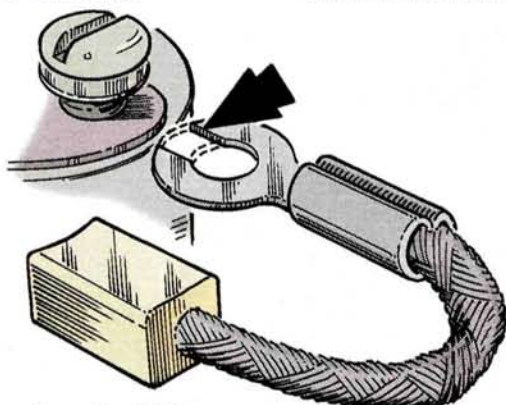
RC Car Action-Inspired

Ira Gerhart of Butler, PA, says this Traxxas Rustler was inspired by Greg Vogel's article about his hopped-up Rustlers. Ira's Traxxas features blue titanium turn-buckles, blue screws, Associated shocks, blue aluminum motor plate, Pro ball differential and a slipper clutch. Also beneath the Pro-Line Ford F-150 body is a ball-bearing tranny, steel output yokes and titanium motor-mounting screws. The truck rides on Pro-Line BowTies (rear) and Edges (front). Ira uses GM 1700 cells, a Novak Atom ESC, GM Purple Bull motor and an Airtronics radio. ■



BY JIM NEWMAN

Radio Control Car Action will give a 6-month subscription (or an extension of your existing subscription) for each of your ideas used in "Pit Tips". Send a rough sketch to Jim Newman, c/o Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. We're unable to publish many good tips because we don't have the sender's name and address. Please note: because of the number of ideas we receive, we can neither acknowledge every one, nor can we return unused material.



Brush-Off

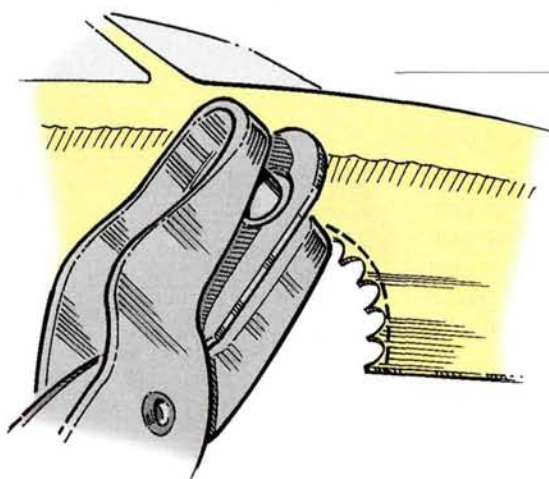
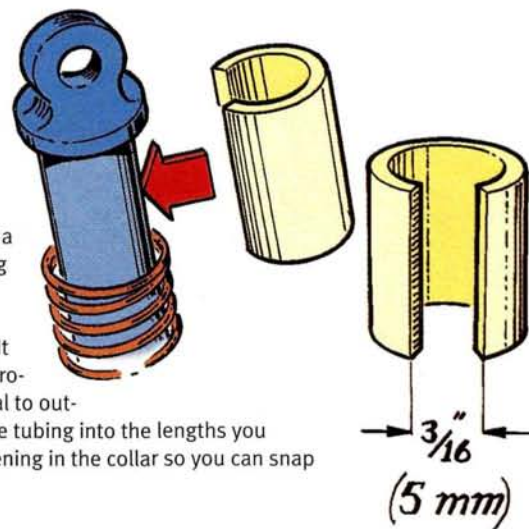
For faster brush changes (and no more lost brush screws!), make a gate in the brush eyelet. Now you can just loosen the screw to replace the brush instead of removing it entirely.

ERIK NIELSON
Midland, MI

Shock Treatment

Here's how to make your own custom preload collars for Associated shocks and some other brands as well. Purchase a foot-long piece of plastic tubing with a 1/2-inch inside diameter and 5/8-inch outside diameter from the local hardware store. It costs about 50 cents and will provide more than enough material to outfit a dozen shocks. Just slice the tubing into the lengths you require, then cut a 3/16-inch opening in the collar so you can snap it over the shock body.

ROSS MEYER
Los Alamos, NY



Fender Nibbler

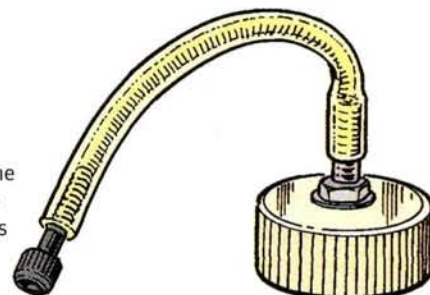
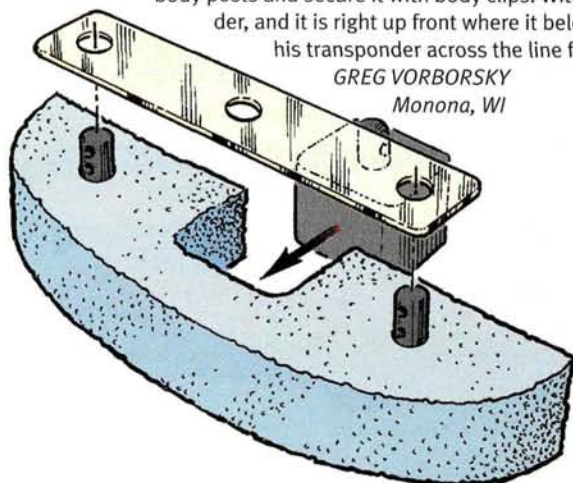
When you trim a polycarbonate body, fender wells and other tight spots can easily be nibbled out with a hole punch. When the waste has been removed, use a hobby knife to smooth the sawtooth edge.

DAVID E. LEITH
Manhattan, KS

Transponder Trick

Don't put an ugly transponder hole in that touring-car body; mount the transponder in the foam bumper! Cut a square section out of the bumper between the body posts. Trim the opening for a snug fit around the transponder, then add a retaining strap cut from Lexan. Slide the strap over the body posts and secure it with body clips. With this setup, you will never lose a transponder, and it is right up front where it belongs (remember, the winner is whoever gets his transponder across the line first!).

GREG VORBORSKY
Monona, WI

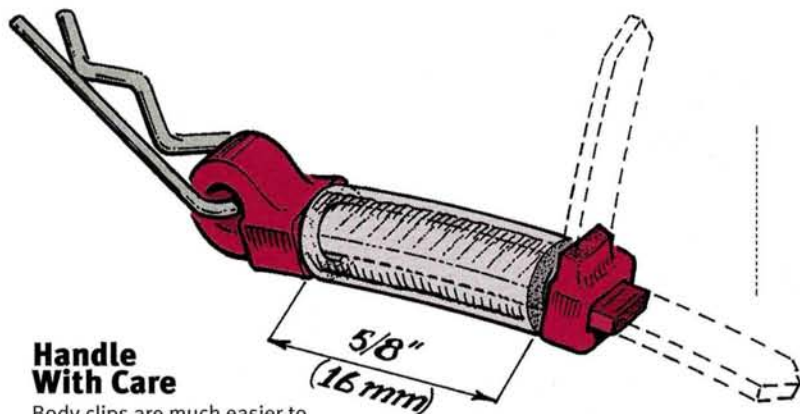


Fresh Fuel

Nitro fuel can be safely stored in a quick-fill bottle if you first place a balloon gasket over the opening. The screw-on cap holds the gasket in place, and the fuel stays fresh until your next outing.

SONNY NEUFELD
Altona, Manitoba, Canada

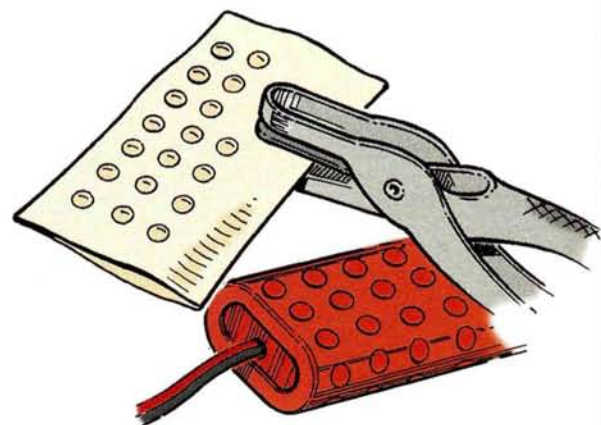




Handle With Care

Body clips are much easier to remove if you make a short handle from a pair of zip-ties and a section of fuel tubing. Fasten one zip-tye around the body clip, slide on the fuel tubing, then lock it in place with the ratcheting "head" from another zip-tye. You can even use colored fuel tubing to match your car's paint job.

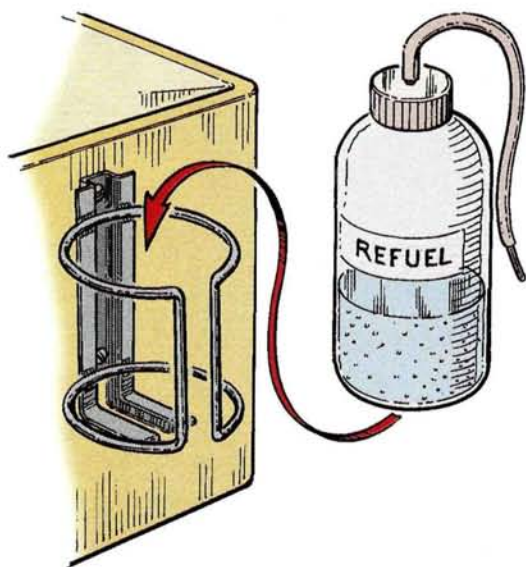
JOEL MURAWSKI
Ransomville, NY



Perforate to Circulate

Increase your pack's cooling capacity by punching holes in the shrink-wrap before you slide it over the batteries. The finished pack's fishnet look lets cooling air circulate around the cells.

MIKE CURRIN
High Point, NC



Easy-Access Fuel Bottle

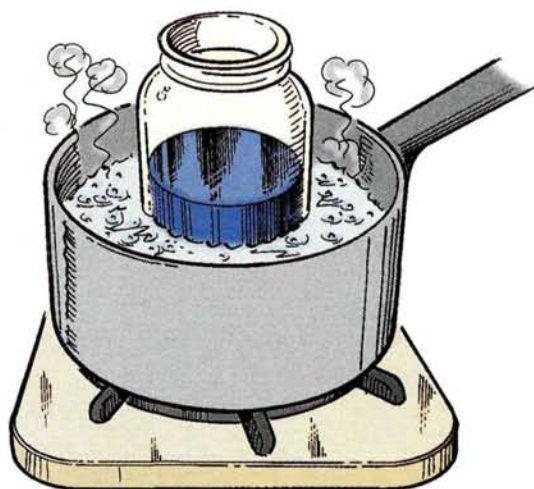
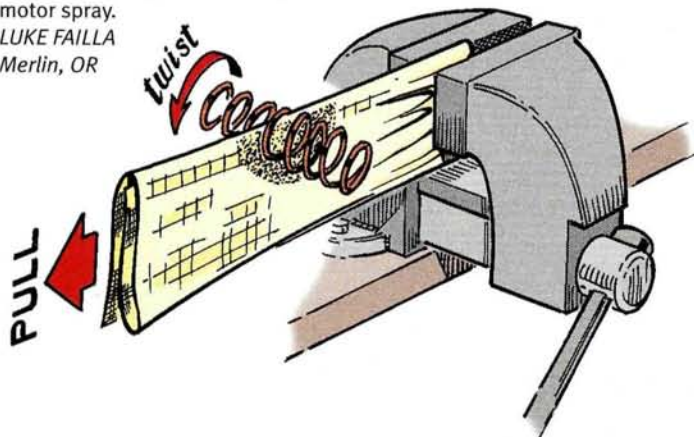
Misplaced your fuel bottle again? Keep it handy with a bicycle water-bottle cage. Attach it to the side of your tool box with self-tapping screws (for plastic boxes) or nuts and bolts (for metal), and bend the cage for a snug fit.

JESSE WILLIAMS
Winston-Salem, NC

Spring Cleaning

Dirty shock springs can scratch and scour your shock body. Keep them clean by stretching a rag taut (tie one end to a table leg, or clamp it in a vise), then "thread" the spring over the rag. For those truly filthy springs, wet the rag with motor spray.

LUKE FAILLA
Merlin, OR



Easy Dyes it

Here's an easy way to dye plastic parts that is neater than using an open pan and allows you to store and reuse the dye. Mix your dye in a clean mayonnaise jar, and place it in a saucepan filled with clean water. Put in the plastic parts. Heat the jar and pan together slowly to avoid cracking the jar. When you're through, remove the dyed parts, let the jar with the left-over dye cool, screw the cap back on, and place it on a shelf until next time.

ANDY HIDLEY
Mountain Top, PA

RRP

ROBINSON RACING PRODUCTS

TROUBLESHOOTING

BY DOUG MERTES • ILLUSTRATIONS BY JIM NEWMAN

Post Mortem

My HPI RS4 Nitro has been a lot of fun since I first put it together. I really like the run time I get, especially compared with the four or five minutes I used to get with my electric touring car. But I do have a problem I hope you can solve. I know that Lexan bodies don't last forever, but mine seem to wear out in the weirdest place: the body posts. Long before the wheel wells or front end develop cracks, like on my electric car, the areas around the body posts get cracked and the body post pokes through. When that happens, I can't figure out any way to fix the body, so I just paint and mount another one. Do you have any way to solve this, or do gas cars just go through bodies faster than electric ones? Thanks; your magazine is the best!

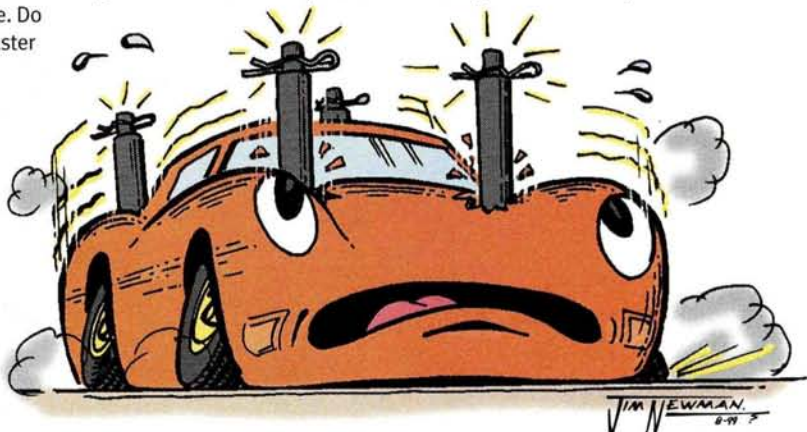
AL SEMLIN

New York, NY

Al, you must be a pretty good driver if you wear out the body post holes before you crack a wheel well! Seriously, this sounds like a problem caused by the vibration of the engine being transmitted through the body post, or repeated impacts. Gas cars vibrate much more than their electric counterparts. And Lexan will fatigue and crack when it's subjected to repetitive motion or bending.

You can stop this from happening by using soft-foam body pads under the shell. They have an adhesive side that sticks to the inside of the body, and they sit on top of the post pad or crosspiece

to dampen the vibes. Or, drill the body post holes slightly oversize and force a piece of rubber fuel tubing over the body post to accomplish the same. Believe it or not, Duro polycarbonate glue does a pretty good job of holding two pieces of Lexan together, especially if it's a flat surface (like a hood or roof on a sedan body). To fix an old body, just cut out a couple of inch-square pieces of Lexan and glue them to the outside of the shell (the glue won't stick to the paint on the inside), then drill new post holes.



Unequaled Precision

Absolute Series Spurs



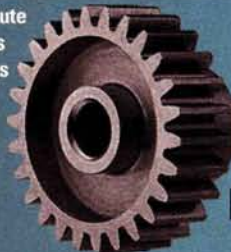
Available in 48P in 80T thru 91T, this is the quietest spur you can buy!
RRP 1780 - RRP 1791

B3 / T3 Lite Aluminum Outdrives



Blue anodized and 40% lighter than stock ball diff outdrives.
RRP 1502

Absolute Series Pinions



Available in 48P in 16T thru 28T sizes. Super hard, lightened and cut unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone!
RRP 1416 - RRP 1428.

Unsurpassed Reliability

Outstanding Performance

Associated Blue Lightened Slipper Kit



The rear plate is hard anodized to reduce wear and the front plate is color treated. The front plate is designed to hold the slipper pad forcing the pad to slip on the rear plate. When pad shows sign of wear just flip it over for a new surface. Metal parts are CNC machined for a flawless fit. RRP 1515

RC10-GT Gas Spurs



Super tough and precision machined from heat-resistant plastic, these spurs mesh flawlessly with our Clutch Bells. 32P spurs in 54T thru 67T, RRP 2261 - RRP 2267, and 32P bells in 14T (New) thru 24T, RRP 2214 - RRP 2224.



Damaged Diff's

I drive a Yokomo YR4M2 sedan outdoors on the parking lot. I race every couple of weeks, but not so much that I wear anything out. Tires seem to last me for an entire season (or until a better set comes out), and motors also last a long time. I guess I'm just easy on my equipment, and that is why I'm so confused about my differential problems. Every time I run my car, it seems I have to rebuild my diff's at the end of the day. Replacing the thrust-bearing balls, diff-adjustment screw, diff balls and rings gets kind of expensive after a while! Is this wear typical, or am I doing something wrong?

AL HANNIGER [email]

Al, the differentials on that Yokomo car—as on many on-road cars—are more exposed than I like to see them. It makes an efficient design, but it also means that the diff's must be serviced more often than those on a car with enclosed gearboxes. Still, it sounds as though you're going overboard when it comes to maintenance!

It's not unusual to have to clean, relube and adjust the diff's on a touring car after a day's running, but the thrust balls, diff balls and rings should last a long time. You should simply be cleaning the diff's, not replacing them. If, after a day of running, there is enough wear in the diff's components to warrant new parts, then perhaps your diff's aren't properly adjusted. They are either too loose and are slipping, thereby wearing out the diff components, or you have set them far too tightly and they are denting the rings and flat-spotting the diff balls. If you're sure that the diff's are properly adjusted (tight enough to prevent slipping plus $\frac{1}{4}$ turn on the adjusting screw), focus your attention on the thrust bearings.

The thrust bearings endure more load than the diff balls, and there are usually fewer of them. They are more susceptible to being fouled by debris picked up from the track and usually will work well after a quick cleaning. If rough

traces are worn into the thrust washers, flip them around for extra use before you pitch them. Try

stuffing a small piece of foam inside the outdrive cup on the side of the diff that contains the thrust bearing. This keeps the thrust bearing clean; usually, the grittiness that you feel is what convinces you that it's time to rebuild.

Superb Quality

RC10-GT Steel Combo



Precision machined one-at-a-time from a single piece of steel and then hardened this 65T spur and 15T bell combo will last and last. The extra-hardened clutch bell fits ALL Associated and MIP shoes. RRP 2365

Associated Titanium Stealth Top Shaft



CNC Machined from a single piece of titanium, this super hard, super light top shaft will fit any Stealth transmission. No serious racer should do without this part. RRP 1512.

Intelligent Innovation

RC10-GT Hardened Steel Idler Gear



Cut from solid steel stock, this gear is lightened and then hardened for super quiet precision and extra long life. Jamin' tranny grease is included. RRP 2213

Thoughtful Design

1999 World Cup and National Champion



"I only care about performance, and that's why I run Robinson Racing gears and slipper clutches exclusively."

— Richard Saxton

RC10-GT Hardened Diff Gear



Hard anodized, precision machined aluminum diff gear. RRP 1513



ROBINSON RACING PRODUCTS

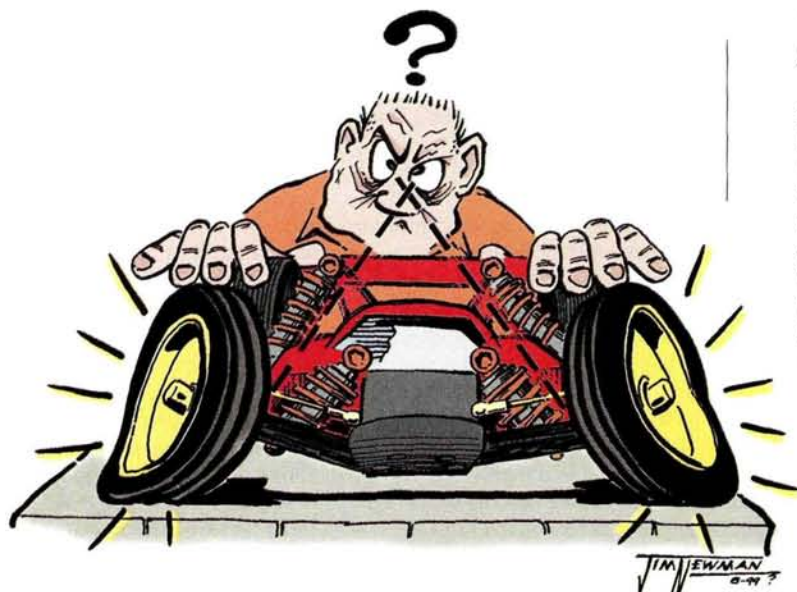
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RRP

ROBINSON RACING PRODUCTS

TROUBLESHOOTING



Toe the Line

I race a Team Losi XX in the stock class at the local dirt track. I modified it with a Team Kinwald motor mount, Lunsford turnbuckles, a Hammad Ghuman top shaft and Boca bearings. I also run a Novak Cyclone speed control, Novak receiver, Trinity matched 2000 cells and a Paradox Pro motor. This car is pretty fast, but as I've become a better driver, I started to play with suspension settings to get more speed through the corners. In particular, I've messed around with toe-in and toe-out on my buggy. My problem is that I have a hard time seeing the small differences that come from adjusting the toe-in. I don't really want to buy some complex measuring device, but I will, if I have to. Are they hard to figure out, or take to the track?

STEVE GRASSLER

Chicago, IL

There are a couple of inexpensive devices you can use to measure toe-in that will easily fit in your toolbox. RPM offers a very simple tool that measures toe-in without disassembly by comparing the distance between the front and rear edges of the tires; ask your hobby shop for RPM part no. 7049 and expect to pay less than \$12. RaceTech's slightly more complex and expensive (about \$30) but very effective gauge measures toe-in as well as camber; ask for RaceTech no. 9007. You will have to remove your car's front wheels to mount the gauge to the axles, but other than that, the gauge is very simple to use. A pair of long, steel pointers make the toe angle very apparent, and with the help of a 99-cent protractor, you can measure the actual toe angle, but this really isn't important; when both front tires are set with equal toe, don't worry about the exact number of degrees. Instead, set up the steering links so that both turnbuckles are oriented the same way (left-hand thread on the left side of the car works for me). Use a precision turnbuckle tool (instead of gripping the turnbuckle with pliers) to make adjustments, and keep notes on how many $\frac{1}{4}$ turns you give each turnbuckle (always adjust the turnbuckles in equal increments, so you don't throw off your steering trim). That way, you can easily undo your adjustment if it doesn't help you on the track.

A Different Kind of Hop-up

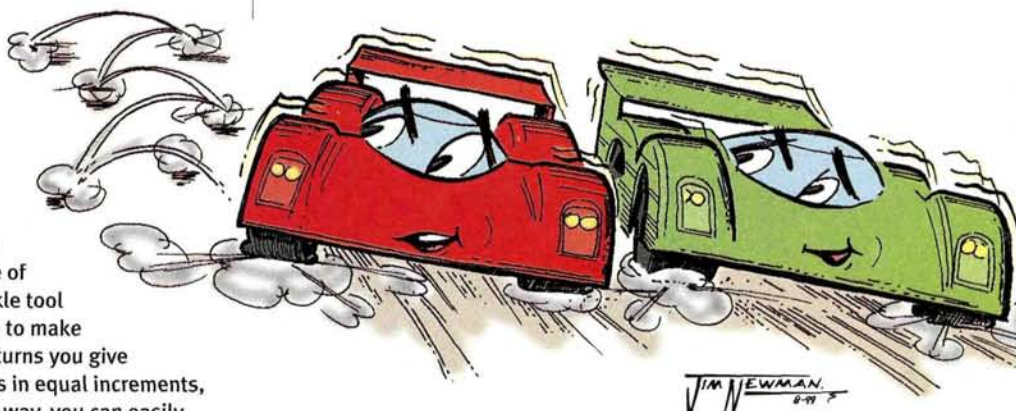
I have a Tamiya Toyota GT-One. I have my car hooked up pretty well, but sometimes when I take a tight corner, the car kind of hops up and down. It's especially bad when there's a lot of traction. This makes my Toyota very slow through the turn because it almost stops when it starts to hop; it would be comical if it wasn't ruining my lap times! There are some wear marks on the inside of the body from the rear tires, but I can't see any way that the tires could rub because they're not very close to the body. I checked to make sure that the tires were glued on securely, and raising the body in the back helped a little, but it still does this crazy dance. Help!

SANDY INDRIGEN [email]

Sandy, my local F1 club decided to run those bodies during its Summer Points Series this year, and several of us had the same problem. I was stumped for a while because nothing seemed to make a difference. I tried raising the ride height and trimming the bottom line of the body, but my car would still jump around from time to time and always in a hard turn when the car was going pretty fast. I thought that a corner of the body was dragging on the carpet, but it also seemed that

Porsche-body cars didn't have this problem. Halfway through the evening, I figured it out: the entire body was shifting over to the outside of the turn whenever a lot of side force was being applied. The body would lean so far over that the outside tire would rub and virtually stop. In slow turns, there wasn't enough force to move it over to the point where the tire would rub. Because the Porsche guys got a better body post in their body sets than the Toyota crowd, they didn't have the same problem.

I fixed my problem by running a short, Lexan stabilizer from the body post to the screw located just inboard of the top plate on each side. This keeps the plastic F1 body post that is pretty floppy from moving around in the corners. Other drivers found a set of the Porsche body posts, or installed screw-in-type posts made by Associated or Trinity. Here's another tip: don't cut out the front wheel "bubbles" on the upper part of the Toyota body. The bubbles permit sufficient wheel movement; removing them makes the front of the body more flexible and more susceptible to cracking. ■





Tamiya **Rover** **Mini Cooper Racing**

by George M. Gonzalez

Tamiya's* 1/10-scale electric Rover Mini Cooper was an immediate hit with enthusiasts and racers, and it inspired the popular Mini Racing Class in the Tamiya Championship Series (TCS). The car's irresistible size is believed to be the main reason for its popularity, but the full-scale Mini Cooper's legendary racing heritage no doubt contributed to the R/C version's success.

Tamiya's latest Mini is sure to be just as successful, but for entirely different reasons: it actually isn't very "mini" at all; it's 1/8 scale—much larger than its M-chassis predecessor. It also has a shaft-driven 4WD chassis and is nitro powered, which basically means it's bigger, handles better and is much faster than the 1/10-scale electric version—sounds like a recipe for another successful Tamiya RC kit.

Is the 1/8-scale Rover Mini Cooper Racing right for you? Turn the pages to find out.



s p e c s

SCALE 1/8
LIST PRICE \$398

DIMENSIONS
Wheelbase 10 in. (254mm)
Width 7.75 in. (197mm)

WEIGHT
Gross (RTR) 66.75 oz. (1,892g)

CHASSIS
Type Double-deck
Material Aluminum lower plate/molded upper deck

DRIVE TRAIN
Type Shaft-drive 4WD
Primary Clutch bell/spur gear
Drive shafts Steel dogbones
Differential(s) Sealed bevel gear
Bearings/bushings Bearings and metal bushings

SUSPENSION (F/R)
Type Lower suspension arm and upper link
Damping Molded, oil-filled, coil-over shocks

WHEELS
Type One-piece plastic
Dimensions (DxW) 2.25x1.2 in. (75x29mm)

POWERPLANT
Engine Tamiya FS-12LT
Carb Single-needle rotary
Exhaust Model airplane canister muffler w/silicone exhaust tube

a not-so-mini **COOPER**

KIT FEATURES

• **CHASSIS.** The 1/8-scale body rides on Tamiya's TG10 Mk.1 chassis, which is usually equipped with a 1/10-scale body. Despite being 1/8 scale, the included Mini body is a perfect fit on the 1/10 chassis because the "real" mini it's modeled after is so tiny. Nonetheless, the 1/8 Mini seems chunky compared with 1/10 cars. Park the 1/8-scale Mini next to one of Tamiya's 1/8-scale TGX Mk.1 sedans, however, and it regains its "mini" status. The double-deck chassis has a thick aluminum lower plate and a molded upper deck. The lower plate has cutouts to allow the pull-start mechanism to protrude slightly through it, and there's a cutout for a flywheel for those who choose to use an alternate engine-starting method. The screw holes on the bottom of the chassis are not countersunk, so the fasteners may scrape on the surface, but the front and rear bumpers also act as skid plates and they take most of the abuse.

The molded upper deck houses the steering and throttle/brake servos, the receiver, receiver battery, antenna and fuel tank and is designed for easy removal for cleanup and servicing. Strangely, the receiver battery pack is in a molded protective box, but the receiver is mounted unprotected underneath the upper deck. Once the upper deck has been attached to the lower chassis plate, you have a very rigid foundation.

• **DRIVE TRAIN.** A shaft-drive system with a single propeller shaft links the front and rear gearboxes and provides continuous 4WD power. Ball bearings are provided for the diff outdrives, but the rest of the drive train (and the wheels) spin on metal bushings. Even with bushings, the TG10's drive train is smoother than some bearing-equipped, belt-driven cars I've tested!

The identical front and rear diffs feature heavy-duty metal ring and pinion gears and internal bevel gears that should last as long as the vehicle itself. Optional ball diffs are available, but the stock units are equally effective if built correctly. Once installed, the diffs can easily be accessed: remove three screws and undo one of the camber links, and the diff is in your hand.

A molded 50-tooth spur gear mounted just in front of the rear gearbox mates with a 19-tooth clutch bell and provides the primary drive. Stainless-steel dogbones provide the final drive. The brake system features high-quality fiber disc brakes and stainless-steel pads and is among the best I've tested; it provides linear braking without a hint of fading.

• **SUSPENSION.** Identical, very rugged, two-piece front and rear lower suspension arms are held together with two self-tapping screws. The upper links allow front and rear wheel camber adjustment. Plastic, oil-filled, coil-over CVA shocks suspend the car, and hard front springs and soft rear ones give the car a slight push

that makes it easier to drive for first-time racers.

The plastic shocks work well, but they do not have interchangeable pistons, so they can be tuned

only by using shock fluids of different viscosities.

While I'm on the subject of viscosity: I found the included silicone shock fluid a little light for a nitro vehicle. If you install the optional front and rear swaybars, however, the stock shock fluid might be just right.

• **STEERING.** The drag-link bellcrank steering system feels silky smooth even though it doesn't ride on ball bearings. The noticeable play (slop) is mostly caused by the ill-fitting, self-tapping step screws that link the system to the steering arms. (Check the "Building & Setup Tips" section for a tip that can help reduce slop.) The steering system suffers slightly from bump-steer, but this can easily be corrected by adding a washer or two underneath the ball connectors that are fastened to the steering knuckles.


• **ENGINE AND ACCESSORIES.** Tamiya's new FS-12LT engine is included with the Mini and is extremely reliable and surprisingly fast. Its carb has a single, high-end needle-valve adjustment and a venturi of modest size. The single-needle carb is easy to adjust, and the small venturi keeps the engine's power in check—both good for novice racers.

The engine also features a ball-bearing-supported crankshaft, a heat-sink head and a rugged pull-starter. There's also a model airplane-type muffler and a long, silicone exhaust tube.

The 75cc fuel tank allows 6- to 8-minute run times and has a very effective, spring-loaded priming button and a flip-top lid with a large fuel opening that makes refueling much easier—especially appreciated when you're in a hurry.

• **WHEELS, TIRES AND MORE.** The kit's special 1/8-scale Mini Cooper gray-spoke wheels are taller and wider than standard 1/10-scale touring-car wheels—basically larger versions of the wheels that come with the 1/10-scale Mini Cooper kits. Finding spare tires will be tough, however, because of their unusual size. Who knows? Maybe Tamiya will release special A-compound tires for the 1/8-scale Mini.

- Awesome 1/8-scale Mini Cooper body.  **Likes**
- Competent TG10 Mk.1 chassis.
 - Cool wheels and tires.
 - Fast, reliable engine.
 - Immense hop-up potential.

- Excess suspension slop.  **dislikes**
- Carburetor has only a single, high-speed needle-valve adjustment, and it tends to load up.

PERFORMANCE

Before tuning the engine for maximum performance, I took the time to properly break it in by carefully following the instructions. Initially, with the extremely rich carb setting, it took a few tugs to get it started, but having been broken in properly, it always starts on the first couple of tugs. Tamiya includes an excellent glow plug that lasted through the entire break-in and survived more than a dozen tanks' worth of pedal-to-the-metal driving.

Once I had found the optimum carb setting, I opened the needle valve a couple more clicks to ensure that the engine would be given proper lubrication. From that point on, it was full speed ahead. I threw down about a dozen Tamiya raised corner markers on the street in front of my house and made my favorite L-shaped course. The Mini felt surprisingly planted on the dusty surface although it had a slight push that required some creative braking to turn hard into the corners; after a few laps, though, the car held a tight line.

The Mini was surprisingly fast on the top end, but it was a bit sluggish when coming out of the corners and accelerating from a dead stop. The included small-venturi carb has a tendency to load up (flood) when run at lower rpm for more than a couple of seconds, and that causes the vehicle to hesitate when you stab the throttle, so you have poor acceleration and out-of-the-corner punch. Unfortunately, the carb's low-end air/fuel mixture is set at the factory and there's no way to adjust it, so you have to compensate for the overly rich setting by staying on the gas and keeping up the rpm. Just for the heck of it, I installed an HPI* SS rotary carb that I had lying around. This carb has both high- and low-end air/fuel mixture adjustments and a giant 5.5mm venturi! I was surprised that the HPI carb could be bolted right on without any modifications.

After I had fine-tuned the new carb for maximum performance, I set the Mini down and squeezed the throttle. The car shot out like a bullet, quickly reached top speed and was soon



TEST GEAR

Futaba* Magnum 3PD FM radio system and two standard S3003 servos • FMA Direct* Warlock Fail Safe receiver • Traxxas* Top Fuel (20-percent nitro) • Team Orion* 1000mAh NiMH receiver pack • General Silicone* fuel line • Du-Bro* in-line fuel filter • OFNA* Ni-Cd glow igniter and fuel bottle

laying down some extremely fast laps, using every bit of the engine's power.

I pulled the car to the side to check the little Tamiya .12 engine's temperature and found that it was running just a tad hot, so I let it cool down completely before continuing. The engine has potential, but I highly recommend that you install the optional heat-sink head to keep it running cooler; if you do that, you won't have to stop after a few tanks of fuel to let it cool down.

A tuned pipe would also benefit the "big" Mini, as the silicone exhaust tube restricts power. I have to admit, however, that the inefficient tube does an excellent job of directing the exhaust out though the vehicle's rear, and that looks incredibly true to scale and keeps the chassis clean run after run.

The kit's hard-compound slick tires with foam inserts also proved more effective than I first expected. They worked surprisingly well on slick, untreated track surfaces. The stock tires gained traction with wear, and when they heat up, they stick fairly well to prepared surfaces.

BUILDING & SETUP TIPS

Tamiya's RC kits are among the easiest to build, and the 1/8-scale Mini is no exception. By following the easy-to-understand, step-by-step illustrations, even first-time builders won't have a problem assembling the kit. Here are a few tips that will make driving and maintaining the vehicle more enjoyable.

■ **Liquid thread-lock:** you've heard it a hundred times before, but don't skip on this stuff because nitro-powered cars are known for loosening their fasteners. Place a drop of thread-lock on every screw that's threaded into metal.

■ **Liquid thread-lock:** you've heard it a hundred times before, but don't skip on this stuff because nitro-powered cars are known for loosening their fasteners. Place a drop of thread-lock on every screw that's threaded into metal.

■ **Liberally grease all the metal bushings.** The kit grease works fine, but a lighter oil that's designed for electric motor bushings will produce less friction. I used Trinity* Royal Oil with great results.

■ **Increasing engine power:** the long silicone exhaust tube that exits through the back of the vehicle does a nice job of keeping the chassis clean, but it robs the engine of a lot of power. If you're looking for a little more punch, you can loosen the screw that joins the two pieces of the muffler and then rotate the muffler 180 degrees so that the exhaust tip exits through the side of the body. Of course, you'll need to make a hole in the side of the body to allow the exhaust tip to protrude.

■ **Reducing slop:** you can virtually eliminate suspension slop by replacing the stock, self-tapping step screws with bushings and machine screws. Tamiya offers a bushing and ball connector kit that's designed for the TA03. Replace the step screws that secure the upper camber links and steering bellcrank system with the bushings and machine screws, and replace the step screws that secure the shocks to the suspension arms and integral shock towers with the included ball connectors.

■ **Engine maintenance:** pick up some high-quality after-run fluid, and apply a few drops into the glow-plug opening and carb after every running session.

■ **Air-filter maintenance:** before running the vehicle, apply several drops of air-filter oil or after-run oil to the foam air-filter element, and work the lube in with your fingers. Always run the car with the air filter installed. After every session, remove the air-filter element and clean it in warm soapy water. Rinse it well, and let it dry completely before reinstalling it on the air-filter mount.

FACTORY OPTIONS

After completing the "Thrash Test," I took a ride down to California R/C Center in Anaheim, CA, to check out some of the latest Tamiya hop-ups for the TG10 Mk.1 chassis. I picked up a few items that I felt would enhance the car's performance. Even though the car featured here looks relatively "box stock," with a close inspection, you'll notice many of the hop-ups I installed.

- TG10
 - lightened aluminum racing chassis—part no. 53367.
 - universal shaft set (2)—53172.
 - aluminum gearbox mount—53366.
- Super low-friction aluminum damper—53280.
- FS-12LT heat-sink head—41037.
- Air-cleaner aluminum mount—41029.
- 2-speed transmission—53201.
- On-road tuned-spring set—53163.
- Turnbuckle
 - upper arm sets(2)—53192.
 - tie-rod set—53191.
- Aluminum brake-arm set—53368.

YOU'LL NEED

- 2-channel radio system with receiver, two servos, switch harness and battery holder.
- 12 AA batteries.
- Fuel.
- Fuel bottle (highly recommended).
- Glow-plug igniter.
- Extra glow plugs.
- After-run oil.
- Polycarbonate-compatible paint for the body.
- CA glue for the tires.
- Thread-locking compound.



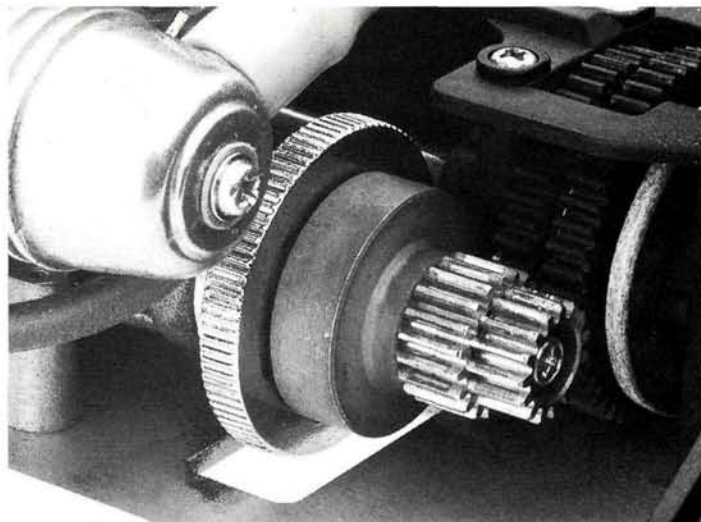
Here's the "big" Mini with Tamiya's $\frac{1}{10}$ -scale M-chassis version. No company in RC scales its cars as accurately as Tamiya.

THE VERDICT

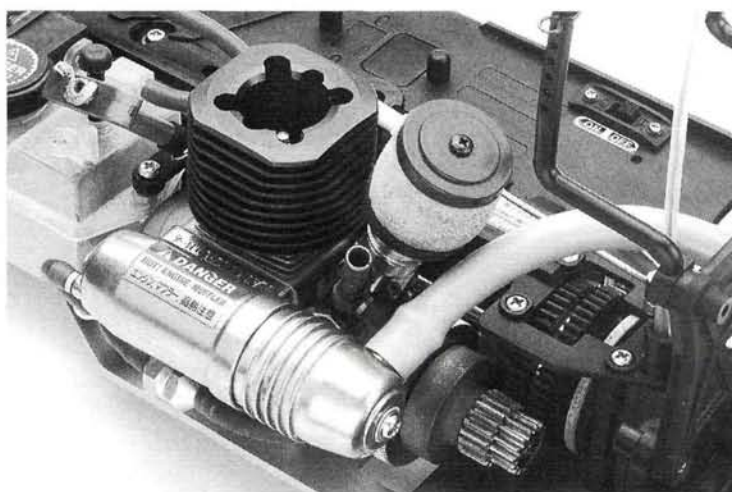
The Mini is fun to drive, easy to work on and extremely durable—excellent traits for any first-timer's nitro RC vehicle. It's based on the popular TG10 chassis, and that means spare parts and hop-ups are easy to find. In my opinion, the $\frac{1}{8}$ -scale Mini is just as appealing as the $\frac{1}{10}$ -scale version, but it's way faster and provides superior handling thanks to the internal-combustion engine and 4WD traction. The Mini could also be converted, in minutes, into a $\frac{1}{10}$ -scale touring car; it includes everything you'll need except the body, tires and wheels. This means that if you want to give racing a try, you can race the TG10 chassis in the popular $\frac{1}{10}$ -scale nitro touring class.

If you're looking for a great nitro-powered on-road car that's sure to draw a crowd at your local parking lot, give the Tamiya $\frac{1}{8}$ -scale Rover Mini Cooper Racing a serious look.

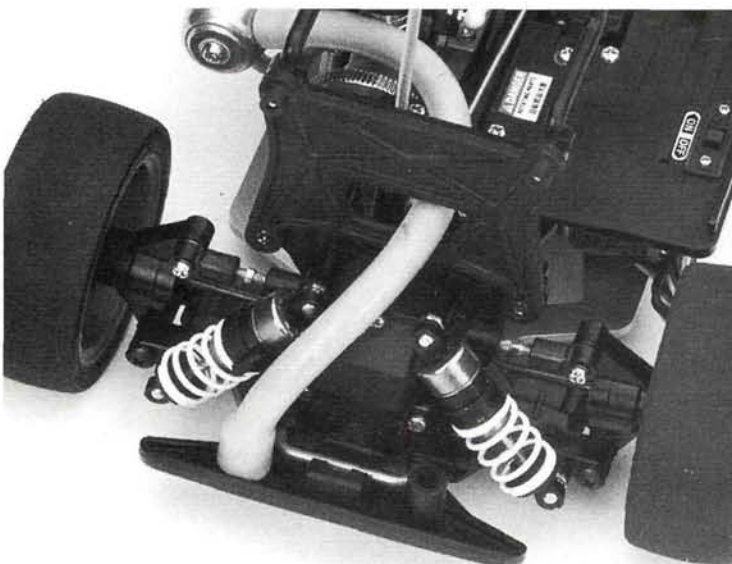
*Addresses are listed alphabetically in the Index of Manufacturers on page 241. ■



I tested the Mini in stock form but added some hop-ups later. This 2-speed really helps out in the speed department!



The Tamiya FS-12LT is a reliable and surprisingly fast performer. I installed the optional heat-sink head and the aluminum air filter mount—two very wise investments. I also replaced the stock carb with an HPI SS carb that allows individual high and low-end mixture adjustments.



Top: Tamiya's optional chassis plate makes it easy to see the radio layout. The big box is actually for the receiver battery; the receiver itself is simply taped to the underside of the upper deck and left exposed to the elements. The steering servo is easily accessible.

Left: the long silicone exhaust tube isn't exactly high-tech, but it does help the Mini run quietly and adds to the scale appearance of the car as the exhaust puffs out from beneath the rear bumper. The low-friction dampers shown here are optional parts.



RaceTech G-Force

by Matthew Higgins

AUTO RACING OF all types and scales always seems to become a game of inches, and RC oval racing is no exception. In this genre of RC competition, even very slight performance advantages can add up to a significant lead as each lap extends the gap between the fastest cars and those with lesser setups. RaceTech, the hardcore-competition arm of the legendary Bolink* brand, offers the G-Force as the ultimate gap-maker. It is an impressively equipped and cleanly designed machine, but the differences between an A-main contender and an "also-ran" are too subtle to discern with just a look. It's time to hit the banking and see whether the G-Force can really handle G-forces.

PHOTOS BY WALTER SIDAS

s p e c s

SCALE 1/10
LIST PRICE \$399.95

DIMENSIONS
Wheelbase 10.31 - 10.41 in.
(261.8 - 264.4mm)
Width 5.9 in. (150mm)

WEIGHT
Gross, as tested 40.3 oz. (1,144g)

CHASSIS
Type Plate
Material 0.100-in. graphite

DRIVE TRAIN

Type Direct drive
Primary Pinion/spur gear
Differential Ball
Bearings/bushings Bearings

SUSPENSION (F/R)

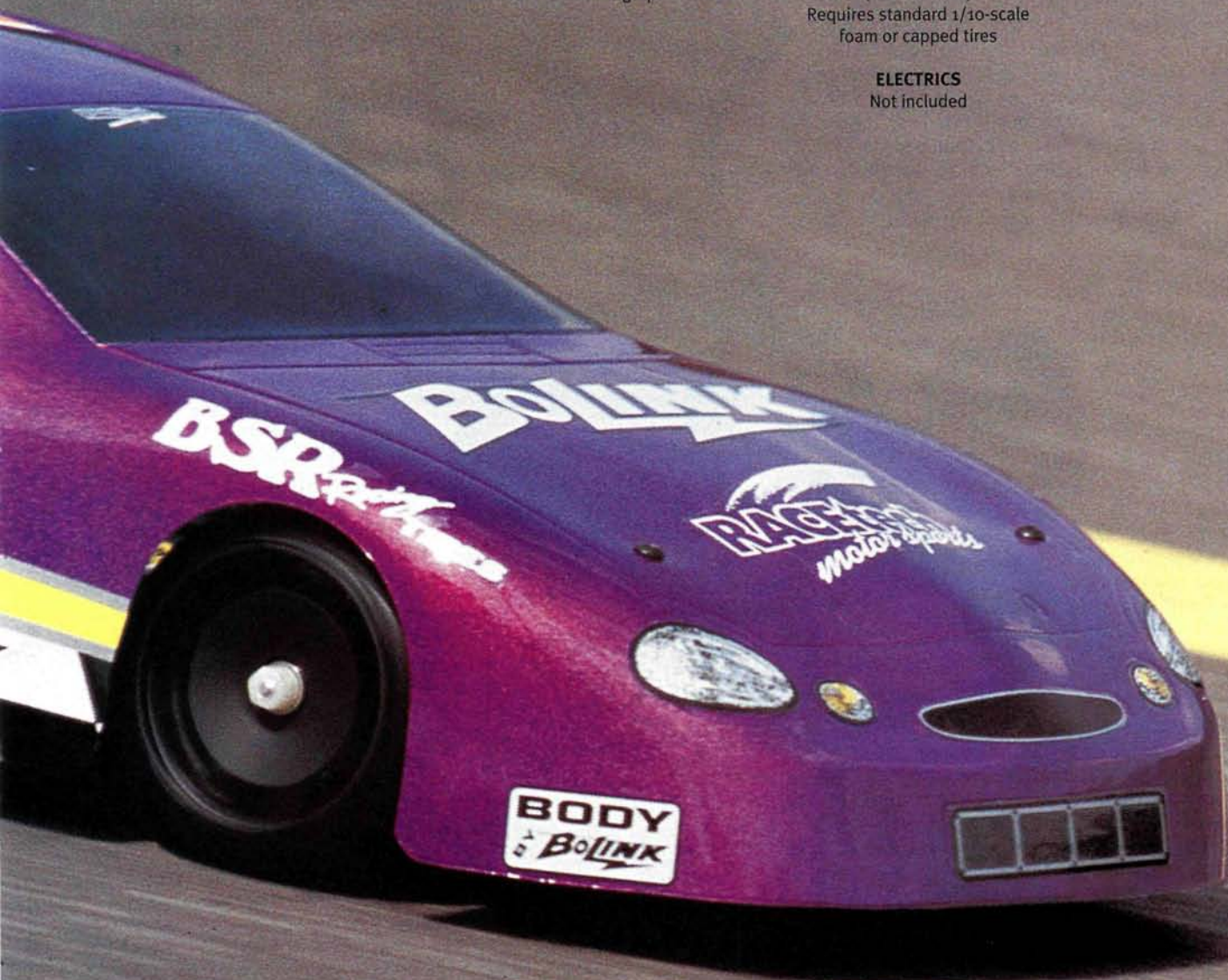
Type Associated
Dynamic Strut/T-bar
Damping Coil springs/coil-over shock

WHEELS/TIRES

(Not included)
Requires standard 1/10-scale
foam or capped tires

ELECTRICS

Not included

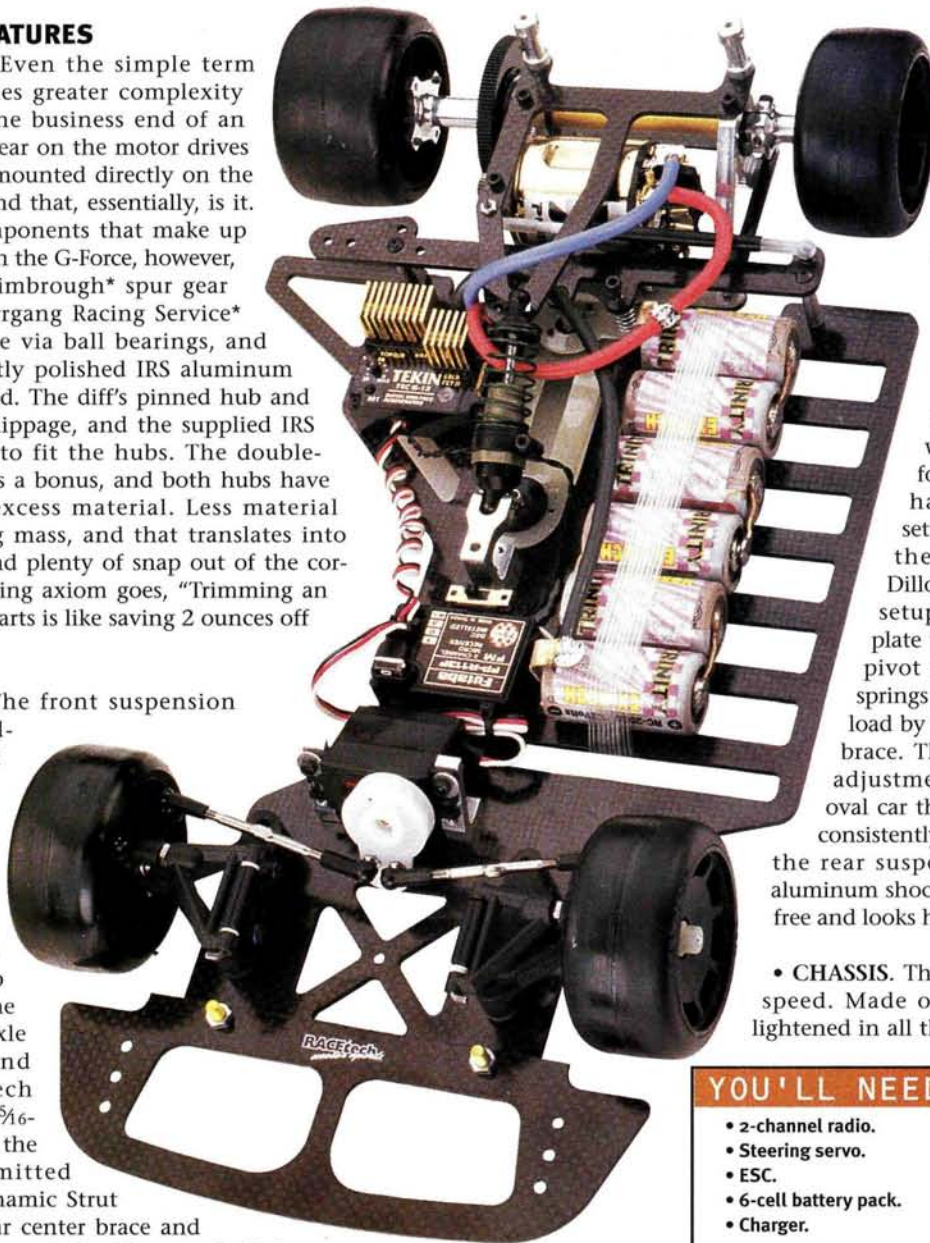


BANK ON IT

FEATURES

• **DRIVE TRAIN.** Even the simple term "drive train" implies greater complexity than is found at the business end of an oval car. A pinion gear on the motor drives a spur gear that is mounted directly on the straight rear axle, and that, essentially, is it. The individual components that make up this simple system on the G-Force, however, are very trick. A Kimbrough* spur gear spins true on an Irrgang Racing Service* (IRS) fiberglass axle via ball bearings, and high-quality, brightly polished IRS aluminum hubs are at each end. The diff's pinned hub and axle prevent ring slippage, and the supplied IRS rings are notched to fit the hubs. The double-clamping left hub is a bonus, and both hubs have been relieved of excess material. Less material means less rotating mass, and that translates into higher top speed and plenty of snap out of the corners. As the old racing axiom goes, "Trimming an ounce off rotating parts is like saving 2 ounces off static parts."

• **SUSPENSION.** The front suspension is the tried-and-true Associated Dynamic Strut unit. Supplied in-line axles (kingpin and stub axle on the same plane) provide aggressive steering. For less steering, pick up some bearings for the standard trailing-axle steering blocks and axles, as RaceTech includes only $\frac{3}{16} \times \frac{5}{16}$ -inch bearings to fit the in-line units. Omitted from the usual Dynamic Strut parts are the tubular center brace and plastic suspension standoffs. The standoffs have been replaced by plastic spacers and a graphite strap that joins the three mounting screws that secure each side of the front suspension assembly. Along with the usual Associated front-end parts, RaceTech includes titanium tie rods, angled aluminum servo mounts and a large Kimbrough servo-saver to point the front wheels.



Out back, the G-Force's single Associated shock damps the action of a Dillon fiberglass T-plate. My car includes an "old-style" shock that is constructed like Associated's off-road dampers, but the latest G-Force kits include the new Volume Compensation System (VCS) shock design.

A "swizzle-stick" damper tube controls lateral pod movement; combine that with Associated shocks for fore-and-aft control, and you have a well-proven oval setup. However, RaceTech ups the ante by including the Dillon tweak system. The Dillon setup adds a fiberglass rocker plate to the rear T-bar pivot. The pivot is spring-loaded with coil springs that feature adjustable preload by means of screws in the rear brace. This allows very fine tweak adjustments and should make an oval car that handles predictably and consistently. An attractive addition to the rear suspension is the machined-aluminum shock/antenna mount; it is flex-free and looks hot.

• **CHASSIS.** The G-Force's chassis screams speed. Made of beautiful graphite and lightened in all the right places, it will serve

YOU'LL NEED

- 2-channel radio.
- Steering servo.
- ESC.
- 6-cell battery pack.
- Charger.
- Motor.
- Tires.
- Pinion gear.
- Body.

FACTORY OPTIONS

- G-Force short-track conversion kit—part no. 8003.
- Adjustable caster kit—9250.
- Threaded kingpins with locknuts—2370.
- O-ring diff assembly—2502.
- Wide diff hub for offset pod position—2121.
- Extra-wide diff hub for offset pod position—2122.

BUILDING & SETUP TIPS

G-Force buyers moving up from less expensive oval cars will have no

problems assembling the kit, but first-time pan-car owners will need to spend extra time with the manual to ensure a snag-free build. The best tip I can offer is to *take your time*; pan cars are not complex, and even the most difficult kit can be conquered with relative ease as long as you exercise patience.

■ When you prepare the chassis, pay special attention to the battery and strapping-tape slots. A carefully filed chamfer on these openings allows the cells to sit as deeply in the chassis as possible for a lower center of gravity and also protects the strapping tape and cell shrink-wrap from damage or fail-

ure. Also, be sure to apply a coat of CA around the cross-brace's forward edge: the area where the tweak adjustment screws thread through the cross-brace is prone to splitting.

■ It will take a few tries, but be sure to properly bleed the center shock to eliminate as much air as possible. An improperly built shock provides very inconsistent handling and high frustration levels.

■ If you're as detail-oriented as I am, you can polish the kingpins with toothpaste for smooth, bind-free suspension movement.

■ The G-Force's battery slots are extremely wide, and this allows greater adjustability. If you run on a

banked track, start with the pack mounted close to the center of the chassis. On a flat track, move the battery pack out a little at a time till you get the feel you like. Because the battery is the car's heaviest component, the effects of its placement are easily felt.

■ If you want more steering going into a corner, reposition the left front-suspension assembly slightly farther back than the right. The resulting shorter left-hand wheelbase makes the car turn in harder. The opposite is achieved when the right arm is moved back.

■ Don't even think about running without a foam bumper!

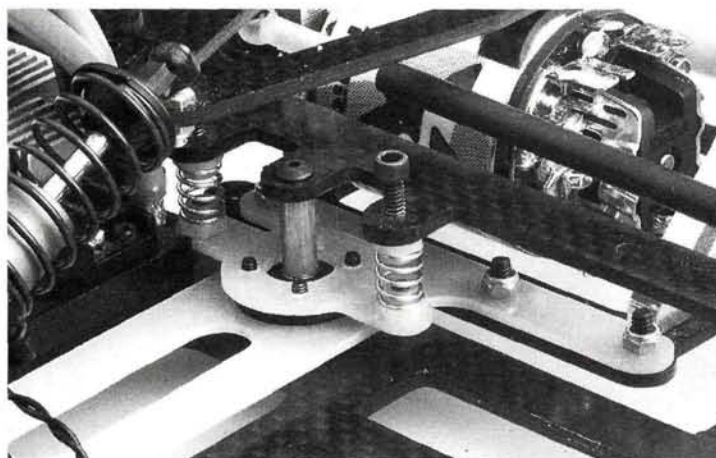


TEST GEAR

- Futaba* 3PDF transmitter and receiver • Hitec* HS-225MG steering servo • Tekin* TSC G-12 ESC • Race Prep Power Zone 5 stock motor • Xipp Pure Power 11x3 modified motor • Jaco tires • Bolink Ford Taurus body

any oval racer well. RaceTech uses four pieces of 0.100-inch graphite to make up the chassis. The main plate has the usual six slots for the batteries and has been drilled for all the hardware except the servo mounts. The battery slots are extra wide (2.88 inches) to allow the car's handling to be adjusted.

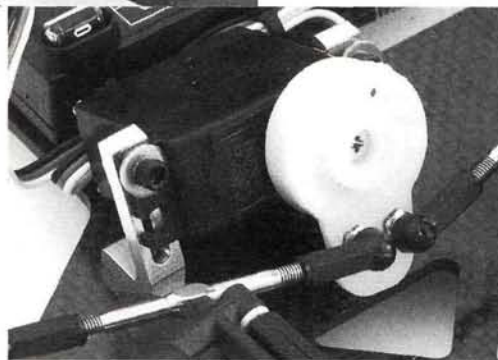
A unique and innovative feature of the G-Force is its independently adjustable wheelbase. The slotted Dynamic Strut's front-end mounting holes allow each side of the front end to be moved



Above: this is the Dillon tweak system. Rather than rely on the inconsistent flex of the fiberglass T-bar for lateral suspension action, two springs handle the pod roll. The Allen screws adjust the preload on the tweak springs. The relieved T-plate is also from Dillon and is included with the kit.

slightly forward or backward; you can alter the wheelbase by as much as 1/10 inch. This is a great tuning aid, especially when combined with caster adjustments.

The G-Force's rear pod features a polished aluminum motor mount that has been machined for lightness. Its extra-long motor screw slots allow a wide range of gear ratios. To complete the rear pod, a similarly lightened left bulkhead is joined to the right by graphite upper and lower plates. Additional holes in the lower pod plate allow 1/4-inch



offset adjustment (an optional diff hub is required to fully exploit this feature).

• **WHEELS, TIRES AND BODY.** The G-Force, like other upper-echelon oval kits, does not include wheels and tires, and that allows RaceTech to trim a few bucks off the kit's price, leaving you some extra dough to get the right rubber for your track. You'll also have to pick up a body, but that's standard fare for oval kits; body choice is another critical setup decision best left to you, not the manufacturer.

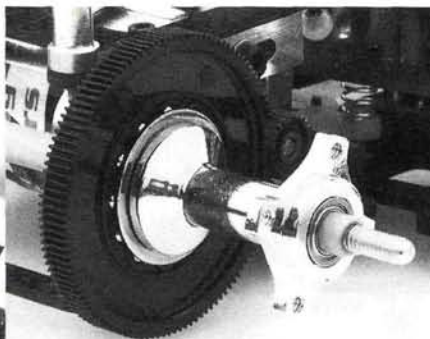
PERFORMANCE

To put the G-Force through its paces, I headed up to K/N Raceway in Stratford Springs, CT, a tight, medium-length track with healthy amounts of banking. It's fast, and it has hosted a few ROAR carpet oval nationals, so I knew it would be an adequate testing ground. After setting up my gear, I soaked the tires in Paragon* Ground Effects traction compound. I started off with Jaco* green rear foams and blue fronts. From past experience, I have found this to be a pretty good starting point at K/N.

For the first few laps, I stuck with the setup recommended in the G-Force's instruction manual; however, I soon brought it in and took out the 1/16 inch of tweak I had dialed in because it wanted

to drift into the wall whenever it exited a turn. With zero tweak, the laps were smooth and seemed fast with the Race Prep* stock motor I was using. I was really impressed with the car's fast, consistent lap times.

Suitably impressed with the stock-powered performance, I bolted in a Xipp* 11x3 modified



Above: the fiberglass Irgang axle and diff hub are pinned for notched diff rings, and a Kimbrough spur gear is supplied.

Below: an industry-standard Kimbrough servo-saver directs the front wheels via a Hitec 225MG servo—an excellent choice for oval work. The aluminum servo mounts are included with the kit.

motor. For maximum horsepower, Xipp includes a set of heavy, metal, silver brushes and heavy springs. When I put the car on the track and began to rip off laps, I was instantly reminded that running at modified speeds requires total concentration, and I tagged the boards a few times when I got behind on my steering. The G-Force, however, came away unscathed, no matter how hard or loudly I sent it into the wood. I'll have to get my mod-class chops down before I give up stock-motor racing, but I'm confident the G-Force can run with any oval car in any class.

FINAL THOUGHTS

If you race oval and want a car with all the goodies—and also something different—then check out RaceTech's G-Force; you won't be disappointed. Short-track, long-wheelbase and speedway versions (reviewed here) are offered, so you can purchase the kit that best suits where you race most often. The short-track has a 0.03-inch wider front track, and the long-wheelbase kit (0.50 inch wider) should shine on the velodromes. No matter which flavor you get, you'll be pleased with the car both on the bench and at the track.

*Addresses are listed alphabetically in the Index of Manufacturers on page 241. ■

- High-quality construction and components.



likes

- Includes lots of goodies, such as the Dillon tweak system, IRS axle and hubs, and machined-aluminum parts.
- Highly adjustable chassis.
- Looks trick!



dislikes

- Very vague instructions.
- Old-style 1/4-inch body mounts.



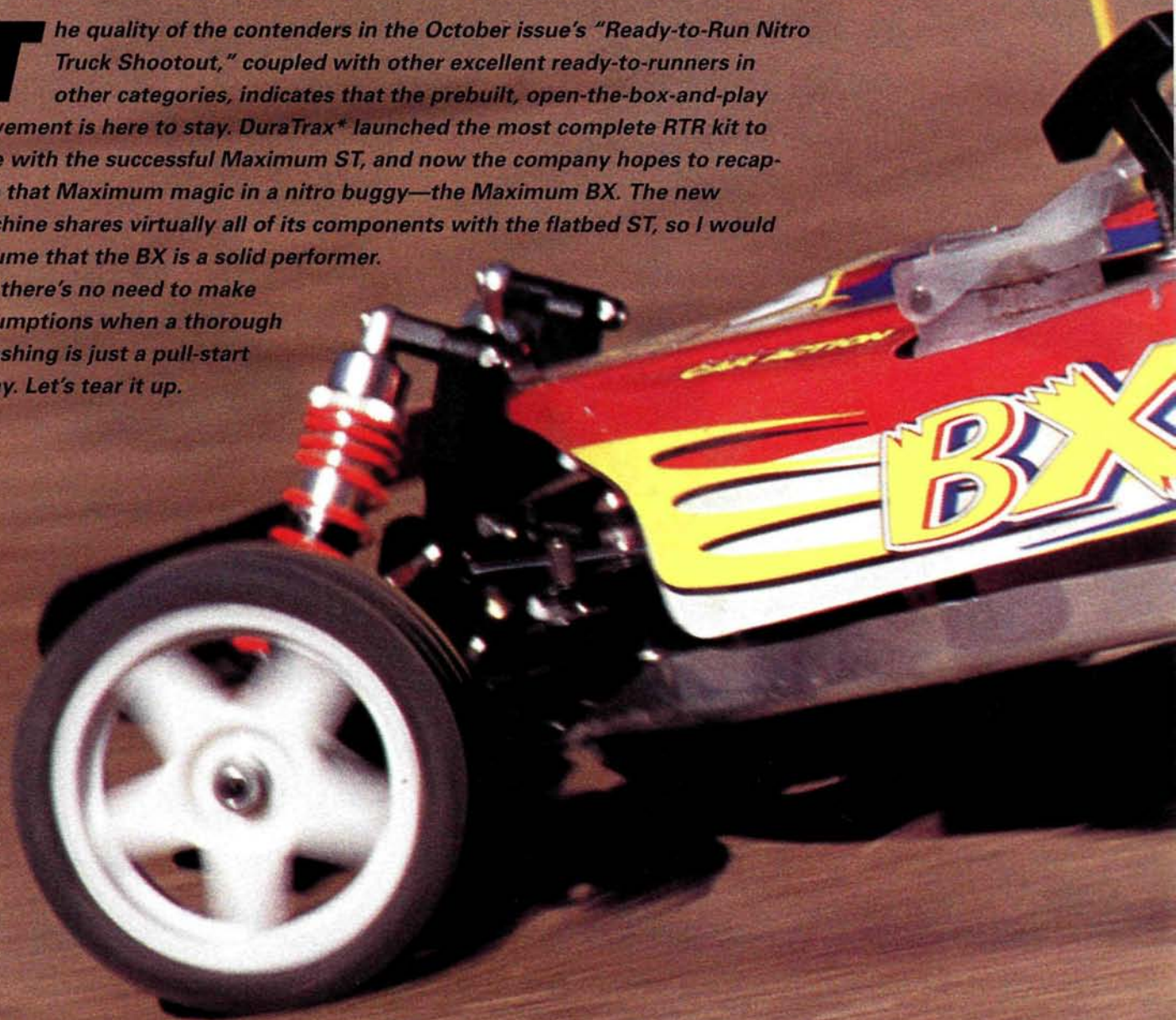
thrash
TEST

1/10 scale gas

DuraTrax Maximum BX

by Doug Huse

The quality of the contenders in the October issue's "Ready-to-Run Nitro Truck Shootout," coupled with other excellent ready-to-runners in other categories, indicates that the prebuilt, open-the-box-and-play movement is here to stay. DuraTrax® launched the most complete RTR kit to date with the successful Maximum ST, and now the company hopes to recapture that Maximum magic in a nitro buggy—the Maximum BX. The new machine shares virtually all of its components with the flatbed ST, so I would assume that the BX is a solid performer. But there's no need to make assumptions when a thorough thrashing is just a pull-start away. Let's tear it up.





maxed out

FEATURES

• **CHASSIS.** The brightly finished chassis is stamped from 2mm-thick aluminum plate. Features include a tub design for strength and a rear brace for additional stiffening (although the chassis is fairly flexy, nonetheless). The rear brace also helps keep the clutch bell and spur gear aligned properly. The front of the chassis is stamped with 20 degrees of kick-up to keep takeoffs and landings under control and provide caster.

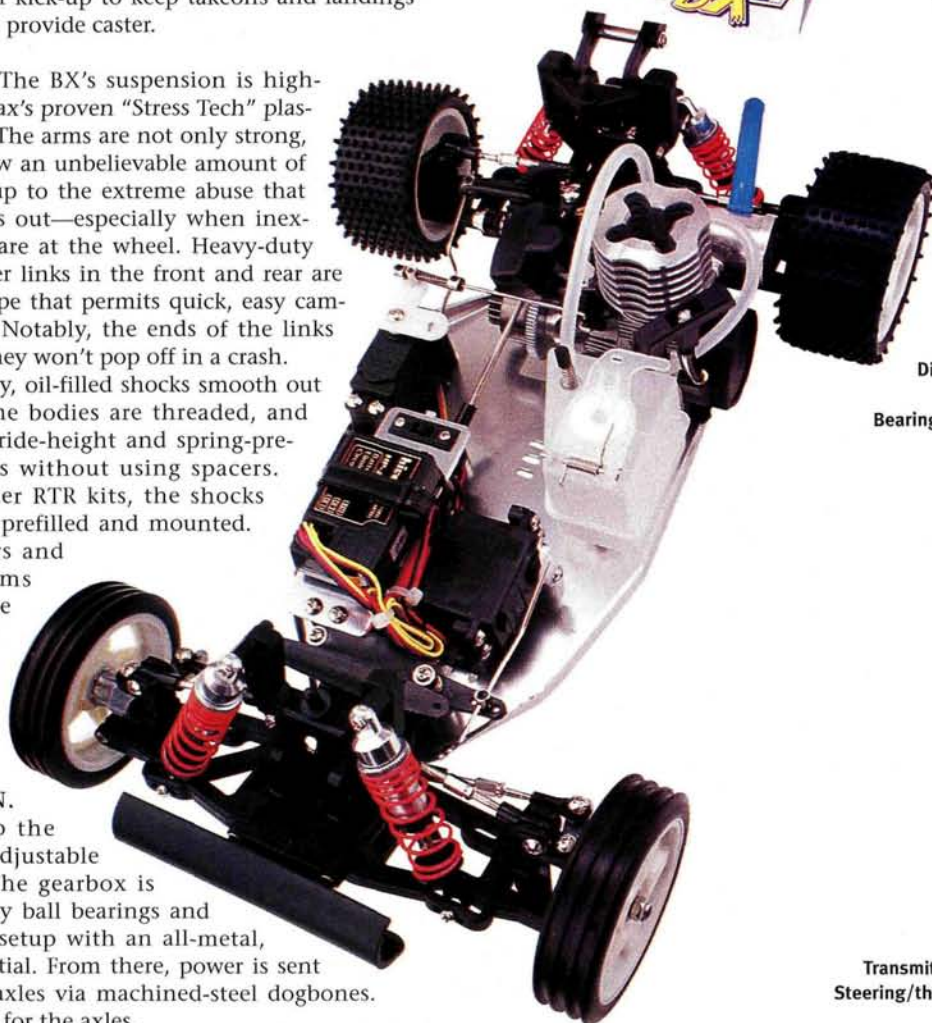
• **SUSPENSION.** The BX's suspension is highlighted by DuraTrax's proven "Stress Tech" plastic lower A-arms. The arms are not only strong, but they also allow an unbelievable amount of flexing to stand up to the extreme abuse that off-roading dishes out—especially when inexperienced hands are at the wheel. Heavy-duty steel upper camber links in the front and rear are the turnbuckle type that permits quick, easy camber adjustments. Notably, the ends of the links are captured, so they won't pop off in a crash.

Aluminum-body, oil-filled shocks smooth out rough terrain. The bodies are threaded, and that allows easy ride-height and spring-preload adjustments without using spacers. Unlike some other RTR kits, the shocks come assembled, prefilled and mounted. The shock towers and suspension arms both have three sets of shock-mounting holes for suspension tuning down the road.

• **DRIVE TRAIN.**

Power is sent to the gearbox via an adjustable slipper clutch. The gearbox is fully supported by ball bearings and has a three-gear setup with an all-metal, gear-type differential. From there, power is sent to the rear stub axles via machined-steel dogbones. Bushings are used for the axles.

• **STEERING.** The BX's traditional steering bellcranks feature a built-in, non-adjustable servo-saver. Heavy music wire is used for the center link and the connection to the servo. Steel turnbuckle tie rods make toe adjustments simple, and 4WD-style plastic front hub carriers support



Scale 1/10
List price \$399.99 (RTR w/radio); \$289.99 (Maximum BX only, assembled)

DIMENSIONS

Wheelbase 10.6 in. (270mm)
Width (F/R) 8.8/9.6 in. (225/245mm)

WEIGHT

Gross, RTR 60 oz. (1,701g)

CHASSIS

Type Tub
Material Aluminum

DRIVE TRAIN

Type Enclosed gearbox with slipper clutch
Primary Clutch bell/spur gear
Drive shaft Dogbone
Differential(s) Gear
Clutch 3-shoe
Bearings/bushings Bearings in transmission; bushed axles

SUSPENSION (F/R)

Type Lower A-arm/turnbuckle upper link
Damping Aluminum oil-filled shocks

WHEELS

Type One-piece plastic

TIRES

Type 4-row ribbed/flat carcass spike

POWERPLANT

Engine Torq .12
Carb Rotary
Pipe Canister muffler

RADIO GEAR

Transmitter/receiver Hitec Lynx
Steering/throttle servos Hitec HS-303

BUILDING & SETUP TIPS

■ Even though the Maximum BX begs to be run right away, force yourself to take your time, read the instructions and watch the engine-tuning video. Even if you are an experienced R/C'er, don't assume that all vehicles are the same.

■ For a good fit, you may have to trim the body a bit around the muffler area. Be careful not to trim too much, though, as the Lexan gets a bit thin here.

■ When you mount the body, be aware of the location of the fuel lines. Be sure to route them where they will not get pinched by the body.

■ Remove the engine-mounting screws one at a time and apply a bit of blue Loctite*. If you remove the screws individually, you won't affect the factory-set gear mesh. A bit of preventive work here could save a lot of headaches later.

■ Go over the entire buggy and check to be sure that no screws or nuts were inadvertently left loose (or loosened in transit). Remember, humans build these things, and none of us is perfect.

YOU'LL NEED

- Fuel.
- Glow-starter.
- Glow-plug wrench.
- Extra glow plug.

Here's a tip; you can get everything you need in DuraTrax's Nitro Starter Pack. Ask for part no. DTXP0200.

FACTORY OPTIONS

- Bearing completer set—part no. DTXC1090.
- 4-shoe clutch set—DTXC2541.
- Unpainted body—DTXC6425.
- Torq 12 black heat-sink head—DTXG0582.
- Nitro starter pack—DTXP0200.
- Shock springs: 1.1mm Blue (2)—DTXC9111; 1.3mm Yellow (2)—DTXC9113; 1.4mm Purple (2)—DTXC9114.
- Shock-spring set, 1.1 to 1.4mm—DTXC9120.
- Hi-Flow Air Filter—DTXG2612.
- Replacement elements—DTXG2615.
- Clutch bell: 13T—DTXC2521; 14T—DTXC2522; 15T—DTXC2523; 17T—DTXC2525; 18T—DTXC2526.

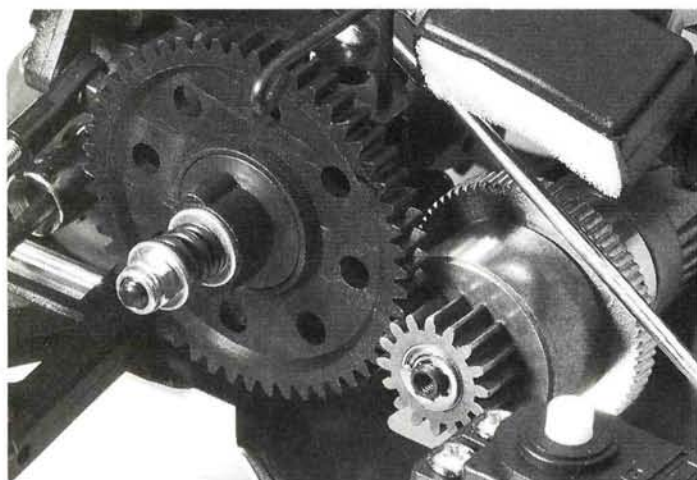


TEST GEAR

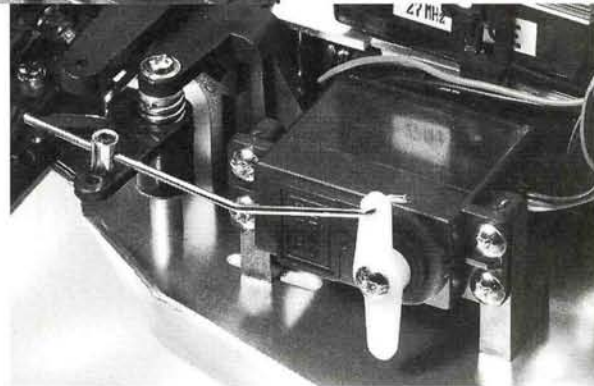
Hitec Lynx radio with S3000 servos • DuraTrax starter kit (includes Red Alert fuel, fuel bottle, glow starter, wrench and charger)

heavy-duty, cast-aluminum steering knuckles. Good luck trying to break these!

• **ENGINE AND CLUTCH.** The ponies are supplied by DuraTrax's Torq 12 engine that includes a bushed connecting rod and a bearing-supported crank shaft. The mill's rotary carburetor includes



Above: the BX's tranny is equipped with a slipper clutch to extend gear life and help prevent wheelspin on slippery surfaces. Ball bearings are used in the clutch bell instead of less reliable roller bearings, but the BX cuts a corner with the cheap-o air filter (visible above the clutch bell). Don't worry; the filter is good enough. **Right:** the Z-bend steering linkage is one of the BX's few low points. It's functional, but it doesn't take long to develop play.



high- and low-range mixture-adjusting screws, and these make the Torq 12 an engine you can learn with. An oversize, cast- and machined-aluminum heat-sink head tops off the powerplant. Power is sent out to the tranny via a heavy-duty, three-shoe clutch and a one-piece-steel, dual-ball-bearing-supported 16T clutch bell. A canister muffler completes the engine.

- Slipper clutch.
- Highly adjustable suspension.
- Aluminum shocks.
- Batteries are included!
- Well-produced instructional video.

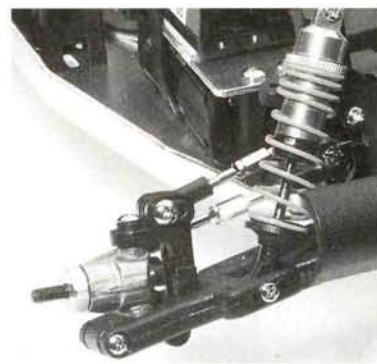
likes

- Canister-type muffler inhibits engine performance.
- Tires are very "80s"—flat and square!

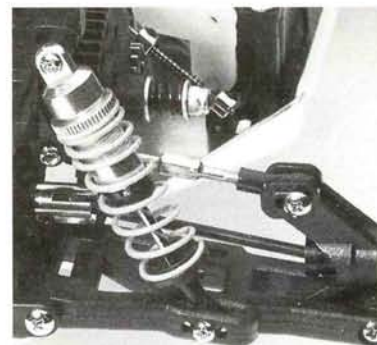
dislikes

• **RADIO SYSTEM.** The included Hitec* Lynx AM radio system is tuned to the 27MHz band, and that is a big plus whenever you run nitro vehicles, as the 27MHz band is less susceptible to the radio "noise" associated with nitro cars. The system performs very capably and even includes battery-meter LEDs and adjustable steering dual rate for adjusting total steering throw. DuraTrax even includes 12 AA batteries to power the transmitter and receiver; you won't get home and realize you need to go out again because you forgot the batteries. The onboard radio gear is already mounted on the chassis, and all of the linkages have been pre-adjusted. Just install the batteries and set up the antenna per the instructions, and you'll be ready to run.

• **BODY AND TIRES.** Now, this is what I call convenience and simplicity at their best. The BX's body and the wing have been painted and cut out for you. All you need to do is cut out and apply the included stickers, and you'll be ready to go. The front rib and rear knobby tires are factory-glued to the BX's 5-spoke rims and give plenty of bite in the loose stuff.



Above: the cast-alloy, 4WD-style steering knuckles, steel-turnbuckle tie rods and extra-long suspension arms are nicer than the usual "entry-level" equipment found in the BX's price range. **Below:** threaded, aluminum-body shocks offer smooth damping action and easy preload adjustments.



PERFORMANCE

For beginners especially, the key to enjoying and getting the most out of the BX is to thoroughly read the instructions and pay close attention to the included video. That said, it's time to kick some dirt! After I had primed the engine per the instructions, the BX sprang to life with just a couple of pulls on the starter. As always with a new engine, run the mixture very rich so everything has a chance to break in properly. After four or five progressively leaner tanks

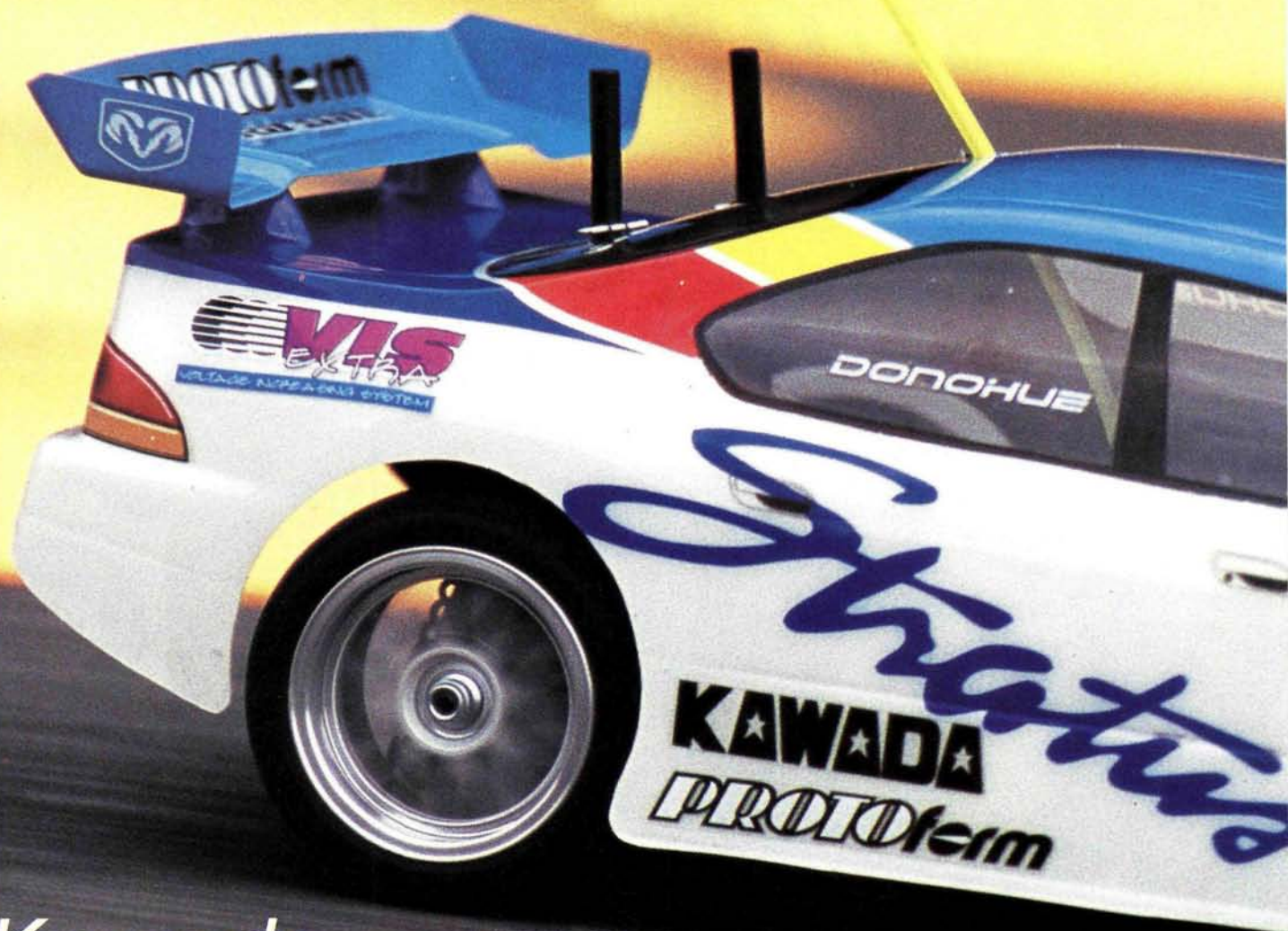
and a fresh O.S glow plug, I had the BX ready for some real action.

I put the BX through its paces down at the local racetrack. The suspension handled the mild terrain very well; it absorbed small bumps and tackled small jumps with ease. The BX's suspension couldn't handle the really rough stuff, though. It was tossed around and spun out as I tried to negotiate the mogul field. The front tires provided more than enough grip in the turns—maybe too much, as sometimes the aggressive steering caused the rear end to loop around. Better throttle/brake control instantly remedied this "problem." Off-track, I pounded the Maximum BX through some gnarly rock beds and root-ridden trails. Once again, all of the "Stress Tech" parts held together, despite my harsh abuse.

Continued on page 201

thrash
TEST

1/10 scale electric



Kawada SV-10GT

by Louie Patterelli

It's a fact: you no longer have to mortgage your house and acquire the latest carbon-clad, alloy-festooned touring car to be competitive on asphalt.

Affordable performance is the game. Kawada* has established itself as a manufacturer of high-quality RC products, and its SV-10 Alcyon is at the pinnacle of design and execution in the pro-level, touring-car wars. Kawada has now entered the world of low-buck, big-bang touring cars with the SV-10 GT, a lower-price stablemate to the Alcyon that carries over many features from Kawada's top car. Without further ado, I give you the SV-10GT.

PHOTOS BY WALTER SIDAS

SCALE 1/10
LIST PRICE \$229

DIMENSIONS
Wheelbase 10.0 in. (254mm)
Width 7.9 in. (200mm)

WEIGHT
Gross, as tested 50.1 oz. (1,420g)

CHASSIS
Type Plate w/vertical
upper decks
Material Fiberglass

s p e c s

DRIVE TRAIN
Type Dual belt
Primary Pinion/spur
Differential(s) Ball
Bearings/bushings Metal bushings

SUSPENSION (F/R)
Type Lower A-arm
w/upper
control link
Damping Oil-filled, coil-over
plastic shocks

WHEELS
Type Spoke
Dimensions (DxW) 2x1 in.
(50.8x25.4mm)

TIRES
Type Radial tread

ELECTRICS
Not included

high speed low price



FEATURES

• **CHASSIS.** The GT features the same design as the SV-10 Alcyon. Kawada had already done its homework with the "vertical over arch ladder-style twin" (VOLT) chassis. A departure from the usual double-deck layout, this design has proven to be a stable platform for the GT. The chassis plates are fiber-reinforced plastic instead of carbon fiber, and ABS plastic bulkheads are used to support the side plates and suspension pivots and house the diffs. The assembled chassis is surprisingly rigid from front to rear but flexes slightly laterally. Wherever possible, the main chassis has been relieved to save weight.

Whether you choose to run stick- or saddle-pack batteries, Kawada's retainers are quite possibly the most secure in the business. If you choose the stick configuration, you'll have three location choices to help fine-tune the car's handling.

• **SUSPENSION.** The suspension is pretty much standard touring-car fare with sturdy independent A-arms at each corner, and the upper suspension links are equipped with turnbuckles, so camber may be adjusted precisely and easily. Kawada's EZ Adjust caster system allows you to adjust front caster in increments of 0, 2, or 4 degrees, and in the rear, anti-squat can also be set at 0, 1, or 2 degrees. To make adjustments, just remove and reposition two screws. Damping is handled by a set of plastic friction shocks that can be converted to oil-damped units with an optional seal and piston kit.

High performance springs are included, but they are really too stiff to be of much good on anything except the most pristine, smooth surfaces.

• **STEERING.** A single, center-mounted bellcrank points the GT's front wheels. It gives ample steering throw with minimum bump-steer. The steering arm uses

bronze bushings for support. Adjustable tie rods link the bellcranks to the steering knuckles to continue the "highly adjustable" theme.

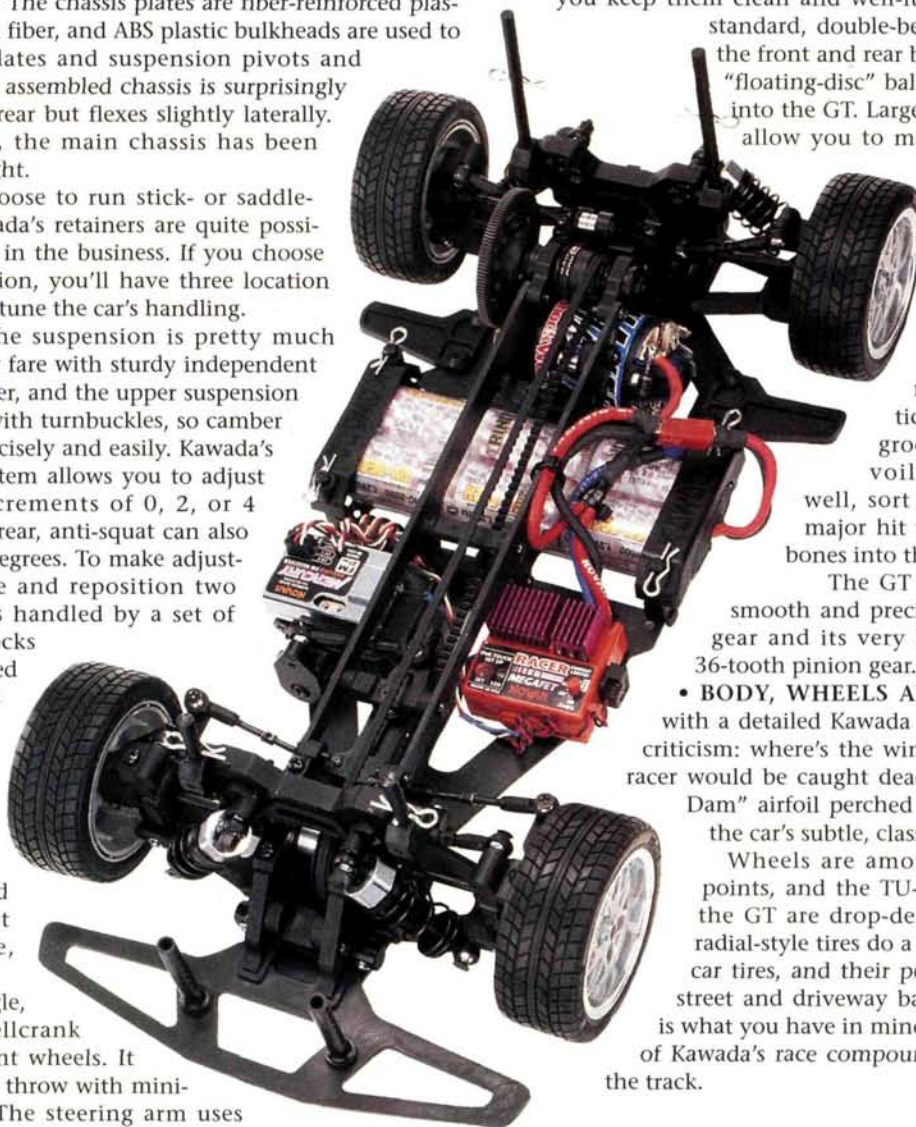
• **DRIVE TRAIN.** Bronze metal bushings are used throughout. The metal bushings will give acceptable performance as long as you keep them clean and well-lubed. The drive system is a standard, double-belt affair with tensioners for the front and rear belts. Kawada's super-smooth "floating-disc" ball diffs have found their way into the GT. Large conical spring washers that allow you to make minute adjustments to the diff action suspend the diff pulleys.

The GT's drive axles are definitely worth mentioning. A regular-looking dogbone is inserted into a regular-looking drive cup that has a groove machined around it. A plastic retainer clip slips into the groove on the outdrive and—voilà!—instant universal ... well, sort of, anyway; but at least a major hit won't send one of the dogbones into the next county.

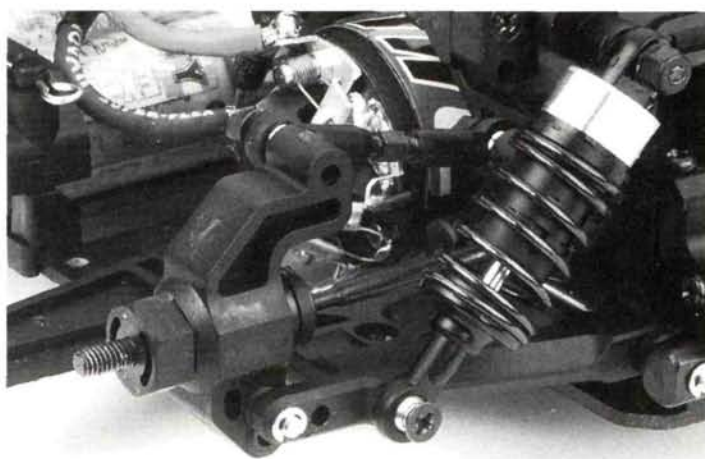
The GT comes with Kawada's very smooth and precise 64-pitch, 116-tooth spur gear and its very heavy—but nicely made—36-tooth pinion gear.

• **BODY, WHEELS AND TIRES.** The GT comes with a detailed Kawada Lexus LS400 body. My only criticism: where's the wing? No self-respecting street racer would be caught dead without a "Grand Coulee Dam" airfoil perched on the trunk lid, but I like the car's subtle, classy lines without it.

Wheels are among Kawada's really strong points, and the TU-37 8-spokers included with the GT are drop-dead gorgeous. The included radial-style tires do a great job of looking like real car tires, and their performance is acceptable for street and driveway bashers. But if corner-carving is what you have in mind, swap them for a set of any of Kawada's race compounds, and you'll be ready for the track.



The steering knuckles and hub carriers are very chunky and proved to be rugged (no surprise there). Note the bar that passes through the front bulkheads; by repositioning the screw just above it, caster is easily adjusted.



The rear hubs are also beefy. The GT includes friction-damped shocks that are easily converted to oil-filled units by installing optional seal and piston parts.



TEST GEAR

Futaba* 3PDF radio • Novak* Mercury receiver • Novak Racer electronic speed control • Maxtec* Shock Wave 11-turn triple motor • Trinity* Midnight II Pro • Trinity Ex-Tech World RC2000 Ni-Cd battery pack

PERFORMANCE

I tested the Kawada box-stock with both stock and modified motors, and I was honestly surprised. For a bushing-equipped car, the GT is quick, even with a stock powerplant. I would still put bearings at the top of the upgrade list, as the bushings' performance is bound to deteriorate, but the GT will run happily and competitively from the get-go.

For considerably higher speeds, I bolted in an 11-turn mod motor, and used the extra velocity to test the limits of the chassis. The drive train is certainly up to handling heavy horsepower (no surprise there), and the friction shocks actually worked competently; when I got aggressive and tried to upset it with quick, jerky steering inputs, the GT just took it all in stride. I'm not saying this is the setup that will win the next carpet nationals, but

- High-quality design.
- Pro-level performance—entry-level price.
- Efficient drive train.
- Lots of potential.



Likes



dislikes

- Heavy pinion gear.
- Friction shocks—what's up with that?
- Bearings aren't included.



Hurricane Floyd prevented the included Lexus body from reaching the RC Car Action offices in time for

action photography, but here it is in glorious color. Nice.

this car is easy to drive.

When the going gets rough (rough road, that is), the GT loses its composure. There just isn't enough damping in the friction shocks to keep the tires on the tarmac.

FINAL THOUGHTS

The GT delivers great performance at a reasonable price. The potential is there to make this entry-level street bomber into a bona fide parking-lot terror. A set of bearings, racing rubber, some O-rings and pistons for the shocks are all it will take. Save your pennies and take that "For sale" sign off your house; it's time to go racing!

*Addresses are listed alphabetically in the Index of Manufacturers on page 241. ■

BUILDING & SETUP TIPS

Having built Kawada's top-of-the-line SV-10 Alcyon, I figured the GT would be a breeze. I was right. Kawada's instructions are good; more details and better Japanese-to-English translations make the instructions easy to follow. Here are a few tips that might help as you build, and setup info straight from Kawada that should help you get the most from your new SV-10 GT. The information was provided by Kawada USA's tech-support representative Brett Sisley and should be considered a starting point.

BUILDING

■ Building the diffs is kind of a balancing act. You need to stack all the parts on the Allen wrench and capscrew while simultaneously tightening the nut on the opposite side. Take the phone off the hook and demand absolute silence while doing this.

■ There are a lot of holes in the shock towers. It's easy to put a screw in the wrong hole and wonder why the car won't sit level when you've finished. Yes! I speak from experience.

■ Chassis width: remember that this car is 200mm wide, not 190mm like most other electric sedans. If you want a larger selection of bodies, buy the shorter dogbones or universal drive shafts and build the car to 190mm specs. You'll have to install shorter ball cups on the upper links and move the outer hinge pins inward as well.

■ Dogbone spacing: put three O-rings in the left, front diff cup and five inside the right front diff cup. This will hold the dogbones in place when cornering hard.

■ Be sure to clean your rims with denatured alcohol or motor spray before you glue on the tires.

■ Steering trim: make sure that you have the same amount of travel in both directions.

■ Diff adjustment: hold the right, rear wheel and spur gear, and try to rotate the left wheel. It should be almost impossible to turn. If it is not, tighten the rear differential about $\frac{1}{16}$ turn, and check it again. Adjust the front diff so that it feels the same as the rear diff.

■ Belt tension: on your first run, listen for any "clicking" noises under acceleration. If you hear clicking, you may have to adjust your belt tensioners. Start with slight tension, and increase it gradually. Use only as much tension as you need to prevent the belts from skipping.

■ Check the mesh between the pinion and spur gears: slide a thin piece of paper between them. With the motor screws backed off a little, lightly push the motor and pinion toward the spur with the paper still between them. Tighten the motor screws, and your gear mesh should be perfect.

SETUP

Front suspension

Camber: 1 degree negative

Caster: center holes on bulkhead (2 degrees)

Inner camber-link location: lower, innermost hole on shock tower (long rod adjusters will be required)

Shocks

Shock fluid: 35WT

Pistons: no. 1

Shock length: 62mm

Preload: 1mm

Rear suspension

Camber: 2 degrees negative

Anti-squat: center holes on bulkhead (2 degrees)

Inner camber-link location: lower, innermost hole on shock tower (long rod adjusters will be required)

YOU'LL NEED

- 2-channel radio system.
- Steering servo.
- 6-cell Ni-Cd stick or saddle pack.
- Motor.
- ESC.
- Polycarbonate-compatible paint
- CA glue.

FACTORY OPTIONS

- Shock O-ring caps—part no. DN-904.
- Shock-oil seals—DN-905.
- Dust boots—DN-100.
- 3mm silicone O-rings for shocks—DN-907.
- "High-Molecule" plastic shock piston—DN-909.
- RS wing—TU-44.
- Universal joint—SV-20.
- High-torque servo-saver—B-13.
- Bearings
 - 5x10 (6)—SV-34.
 - 10x15 (2)—SV-35.
 - 5x10 (2)—SV-36.
 - 4x8 (1)—SV-37.

Rear shocks

Shock fluid: 20WT

Pistons: no. 2

Shock length: 62mm

Preload: 2mm

by Peter Vieira

THE CENTURY

A history of our hobby

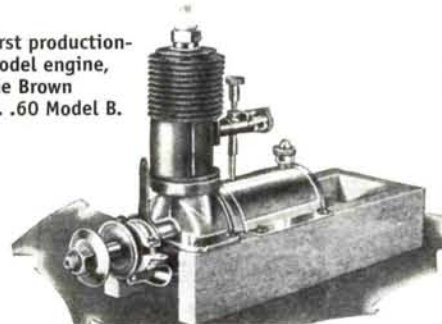
Many RC hobbyists remember the heady days of Hornets and Grasshoppers and Big Bears (oh my!) and believe that these memories qualify them as “old-timers” who were there “at the beginning.” Not to diminish our total respect for the legions of loyal RC fans who have stuck with the hobby that long, but the roots of the hobby actually run much deeper than the early '80s' scene. In fact, powered car modeling has been around ever since the

first automobiles appeared at the turn of the century. Whether you're nostalgic for the old days or just curious about the history behind the high-tech cars on your bench, you're sure to enjoy the RC-flavored trip through time that unfolds on these pages.

1929 *Model Airplane News* is the source for information on the popular airplane hobby, and also features the earliest powered model cars.



First production-model engine, the Brown Jr. .60 Model B.



This tether car from the '30s has great scale appeal and must have looked spectacular as it circled a pole attached to its wire. Note the spark-ignition engine; glow plugs were still over a decade away.



1886 First automobile. Gottlieb Daimler motors down the streets of Germany in his “horseless carriage.”

1897 First wireless telegraph transmission. Guglielmo Marconi transmits the first wireless telegraph signals across Britain's Bristol Channel.

1930

1920s Commercial radio is the popular entertainment of the day.

1930s Tether-car racing. Thanks to the emergence of reliable model engines, powered auto modeling becomes popular.

1945

1939 to 1945 World War II. Radio transmissions are used to guide bomber and fighter pilots to their targets. The War effort drives radio technology at an exponential rate.

OF RC



Early radio gear looked more "mad scientist" than high-tech. This tube system appeared in the '50s.



Most receivers in the mid- to late '50s employed these little Jaico relays. They proved popular even as single-channel control was replaced by multi-channel reed control.



This rig from the mid-'50s seems to be powered by the same apparatus as was used to bring Frankenstein to life. The tractor trailer theme was no doubt chosen to conceal the bulky electronics.



Late '40s Radio-control hobby is born as model airplanes are fitted with crude escapement-type radio systems from Polk, Beacon and others.

1950s Model railroad technology spawns slot-car hobby. Earliest homebuilt RC car conversions appear.

1960

From Dry Lakes to Slot Cars to R/C

by Gene Husting



When you know where I started, you'll see how easy it was for me to enjoy RC cars. I feel that I've been very fortunate to live in the right time to be able to enjoy so many types of car racing.

In 1942, when I was 15, I worked in a grocery store for a starting wage of 25 cents an hour. I saved every penny I made so I could buy my first car when I was 16: a '32 Ford V-8 coupe. This was the era of hot rods, and I became involved with racing, but my hot-rod period abruptly ended when I reached 18 and received a "Greetings" letter from Uncle Sam. World War II ended during my tour of duty in Korea, and I returned home to my family and my girlfriend, Midge, and went back to work. I got quite heavily into the racing scene; I raced every month out in the desert on the dry lakes. These were straightaway speed contests to see how fast the car would go in high gear. I quit driving when my best friend, Rulon McGregor, who lived across the street from me, was killed at "The Lakes."

Then I teamed up with Reece Adams, who wanted to do the driving and who also worked



at an auto-parts store. This was a big plus, as my budget was limited by family needs; I had been lucky enough to marry the perfect girl for me, and Midge and I were on our way to having four children. My partnership with Reece was highly successful,

but as my children grew, I knew that I couldn't keep up with the cost of drag racing. So I sold the engine to Reece and quit big-car racing. I was lost! Racing is what I really enjoyed. My wife told me to go talk to Charlie Hamel, who lived across the street. Charlie said he raced slot cars and maybe I'd like to do that. (I told you I had the perfect wife!)

I didn't realize how popular slot racing was. Charlie told me there were more than 60 slot-racing tracks in Southern California at that time; I had no idea it was so big! But the best news was that there was a track called Western Model Raceways only a couple of blocks from my house. And to top that, the best drag strip was there, too. I went to take a look, and I was hooked. Slot-car drag racing was as close to real cars as I was going to get. I enjoyed roadcourse and drag slot-car racing, and I developed the first "sidewinder" cars; all the existing designs had their motors mounted in-line, in the center of the chassis. I even held the national records in the Dragster and Unlimited classes.



It was in 1967 when one of the slot-car racers told me that there was going to be a radio-controlled, 1/8-scale, gas-powered Model Car Nationals the following weekend at a Ford dealership in Garden Grove, CA. Since that was only about 15 minutes away, I went over to take a look. About 45 racers were there. The program featured a number of qualifying heats and then one Main event about



30 minutes long. It was great! These guys could actually drive their cars around the track without having to run them in slots. I knew instantly that this would be my next move. Later, at another RC car race in Garden Grove, the winner, Bill Cambell, allowed some of the racers to drive his car. (I later learned that Bill and his brother Ken owned Delta, the company that made his winning car.) When they had finished, I was still waiting to ask Bill some questions. He asked if I wanted to drive the car, but I told him I didn't know how; he said just to go slow and feel it out. So I did. Then I was really hooked!

The first commercial car I ever heard of was called the Ra Car. After that came the Marker Machine; it was a beautiful car. A company called Heathkit made electronic kits that you could assemble. A Southern California company called Dynamic had made the first car with an independent suspension, but it was simply too fragile. Delta made a very professional-looking car. And there was another company, helmed by Roger Curtis, that had started with a slot-car track; it also made slot-car bodies, braids, tires, etc. This company had also heard about RC cars and started to make them. That company was Associated Electrics!

Gene Husting and Roger Curtis are the co-owners of Associated Electrics.

GENE HUSTING on early R/C systems for cars



"[R/C car hobbyists] never had a decent radio. Part of the thinking with the radios went like this: model airplane guys like to fly the planes so far out they almost disappear, then they bring them back. They had tremendous range. But the people who built the car radios thought, 'Gee, they only need to go out 200 feet,' so with that kind of thinking, they didn't put the same kind of quality into the car radios at the time. They finally figured out the signals were being lost on the ground, and we were standing on drivers' stands, ten guys at a time, with all these signals going out and screwing up the receivers. Somebody at Futaba realized we needed a much different kind of radio, and they made a bulletproof radio: the transmitter was absolutely perfect; the receiver was perfect; the servos were super heavy-duty compared to anything up to that time. If you put this thing in your car, you had no problems—period. Now, that's what made the hobby suddenly jump. It wasn't the first wheel radio, but it was the first reliable wheel radio."



This ancient Orbit radio (left) was a crude, early attempt at a wheel radio.



1977 FIRST TAMIYA RC CAR KIT

In 1977, Tamiya released its first kit designed to be "suitable for radio control." The mostly metal, crudely designed but finely produced chassis was little more than a motorized platform for the intricately molded, highly detailed polystyrene body. The little Porsche was not a factor on the competition scene, but it did mark the beginning of a new direction for the RC car hobby. Led by Tamiya, well-produced, easy-to-assemble kits would make RC accessible to hobbyists of all skill levels, not just those who could master the finicky, fragile, rough-around-the-edges kits from the era of "Star Wars" and tube socks.

1973 Futaba releases its first wheel-type transmitter—the 2F. It is the first high-quality, wheel-type radio designed expressly for competition.



These photos offer a representative snapshot of the 1971 RC scene. The winners of the 1971 on-road ROAR Nats pose with their cars, and Associated's RC1/B racer was a top car of the day (note the ancient Cobra wheel radio). The photos are from a '71 issue of Model Airplane News, which also ran a how-to feature on building the bicycle-derived car starter shown below.



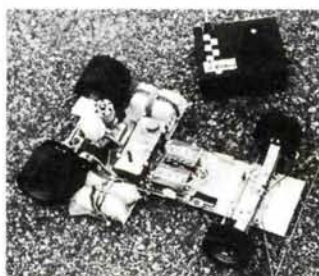
Late '60s Modern day digital-proportional control developed.

FCC grants seven channels on a new band using frequencies on 72 and 75MHz.

1968 Radio Operated Automobile Racing (ROAR) founded by George Sippes.

Bo RADIO CONTROL CAR ACTION

1967 1/8-scale On-Road. First crude, 1/8-scale, on-road nitro cars from Heathkit, Associated, Dynamic and others begin to appear.



"BIG" JIM GREENMEYER on the racing revolution in electric motors



"Back in 1978, the only motor that was ROAR-legal was the Igarashi sealed-endbell motor. So I invented a modular piece that was a piece of circuit board that I had mounted slot-car brush holders on. Then I milled out the inside of the endbell—doing away with the 'brush-on-a-copper-arm' arrangement—and made it like a slot-car endbell, only larger to take a bigger commutator. I sold these for \$69 when the most expensive motor at the time was \$18. People thought I was crazy, but I sold 'em so fast I couldn't make enough!"

Big Jim was well-known for his Check Point motors, and he now heads Trinity's R&D department.



1975 1/12-scale electric racing becomes a popular alternative to 1/8-scale nitro. Popular names include JoMac, Associated, Leisure, MRP and Bolink.

1976 Satellite City Hot Stuff cyanoacrylate (CA) glue hits the market.

1977 Tamiya's first kit designed for RC compatibility reaches hobby stores. The Porsche body car sells for \$60.

1976

1970



1978 ASSOCIATED RC12E

Nitro-powered 1/8-scale cars are often cited as the class that started the RC car hobby, but the importance of 1/12-scale racing cannot be discounted. The small cars from Jerobee, JoMac, Bolink and others allowed racers to compete in a smaller, quieter format—and potentially indoors. But like the early gassers, the 1/12 cars were crude and required a lot of bench-top honing before they were race-ready. Associated changed all that with the 12E, an out-of-the-box racecar that combined durability and simplicity. The 12E later evolved into the 12i, Associated's first ball-diff-equipped car, and the 12L series that is still with us today.



1979 TAMIYA SAND SCORCHER/ROUGH RIDER

Until this dynamic dirt duo hit the hobby shops, off-road RC "technology" was based on little more than barely suspended on-road cars with aggressive tires. The cars didn't handle at all, and they were about as well-protected from the elements as a bicycle left out in the rain. Tamiya changed all that with its Sand Scorcher and Rough Rider; both had aluminum-rail chassis and cast-alloy suspension parts. As anyone who recalls the advertisements for these mud-splashing vehicles will attest, sealed plastic radio boxes also made the cars virtually waterproof. Along with a few Kyosho kits of the time, these Tamiya cars also marked the debut of oil-filled shocks in "mainstream" RC kits.

Early '80s Novak was the first to market reliable, affordable ESCs. The trademark orange case is an RC icon.



1982 Cox introduces the Scorpion, a lightweight, off-road racer that favored performance over less exciting concerns such as waterproofing.

1979 Tamiya releases the Sand Scorcher, the first true, off-road kit to feature full independent suspension.

1980s **BIG BOOM**. Thanks in large part to affordable, durable off-road kits and mainstream hobby-shop distribution, the RC car hobby surges and becomes a bona fide fad.

1982 Tamiya releases the Super Champ—its first high-performance buggy design.

1983 FCC grants 50 additional R/C channels for R/C aircraft and 30 more channels for cars and boats.



1983 MARUI BIG BEAR

This 1/12-scale (!) monster truck was not a technological marvel by any stretch of the imagination, but it was the first to pair ridiculously oversize tires with RC. Performance was tepid by any definition, but the truck left an indelible impression.

SHAWN IRELAND on early '80s 1/12-scale racing

"Before ESCs came out, the speed control was just a wiper arm on a resistor. We'd be racing, and all of a sudden, a car would go out of control, wide open, and would usually knock over

someone's pit table. The wiper arm would just go to the end of the resistor—full throttle—and get stuck. So the marshals would chase

these cars around like rats, and the drivers would shout 'Wiper arm! Wiper arm!' and do this wiper-arm move. It was pretty funny."

Now at HPI, Shawn raced for Associated in the '80s.



The yellow 1200SC cells ruled in the early '80s, but the red 1400SCR cells that replaced them out-classed the SCs with greater performance and durability. Sanyo Ni-Cds continue to rule RC.



1983

1984 ASSOCIATED RC10

During the hobby's boom years in the early '80s, two brands defined RC: Tamiya and Associated. While Tamiya shaped the "mainstream" side of the hobby, Associated owned the competition segment. The RC10 was the reason why; before the gold-anodized tub car hit the track, no 2WD, purpose-built buggies had ever placed performance above all other concerns. There



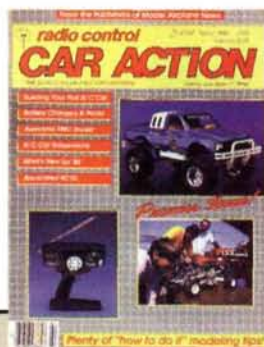
were other "racing buggies" on the market, but their makers thought scaled-down, "real-car" designs and construction techniques were the best route to the winners' circle. Associated embraced new materials and sketched the future of RC in stamped aluminum, fiberglass and plastic. Thanks to the RC10, A-arm suspension with adjustable upper links, rear-motor sealed gearboxes, ball differentials, flat-stock shock towers and large-volume oil dampers became hallmarks of electric off-road racing buggies for the next decade.



1984 TAMIYA FROG/HORNET

Ask any of today's top drivers how they got started in RC, and the story is bound to involve a Frog or a Hornet. Were they technically innovative? Nope. Did they set new levels for high performance? Unh-uh. Did Tamiya sell a gazillion of 'em, fueling the huge growth spurt the hobby experienced in the '80s? You betcha.

1986 *Radio Control Car Action's* first issue hits the newsstands.



1984 The Novak 1, one of the first reliable and affordable ESCs, hits hobby-shop shelves.

1984

The Associated RC10 hits the track for the first time. The car is nearly unbeatable and establishes the basic chassis layout still used by today's 1/10 buggies and trucks.



1988 TAMIYA CLOD BUSTER

There sure are a lot of Tamiyas on this list, aren't there? Trust us: Big T earned its place in history. Here's another reason why: the Clod Buster. The first 4WD, four-wheel steering, dual-motor monster truck was a runaway hit in '86; it even spawned its own cottage industry when aftermarket manufacturers sprang up to support the truck with all manner of custom-machined components.



1989 TEAM LOSI JR-X2

Just when the RC10 seemed unbeatable, a new car began to burn up off-road tracks and sparked what has become RC's greatest rivalry. Enter the Team Losi JR-X2 and the JRX-Pro follow-up. The design of the Losi car was as inspired as the RC10's; it featured a graphite plate chassis, an innovative, 5-link rear suspension, a 6-gear tranny with an externally adjustable ball diff and oil-damped shocks with bottom-loaded seal cartridges. Team Losi even supplied its own tires with the kit, as the company was already an established maker of high-performance treads.

The Tamiya Blackfoot was a fire-brand for the racing truck movement in the mid-'80s.



1985 Jay Halsey and Gil Losi Jr. become the first IFMAR off-road world champions, driving an RC10 and Yokomo Dogfighter, respectively. The RC10 series went on to win the Worlds in 1987, '89, '91, '93 and '95.

1988

1987 The Tamiya Blackfoot launches a wave of interest in monster trucks.

1989 KYOSHO TURBO BURNS

Kyosho has a long history in 1/8-scale gas, but the Burns series is probably the most important K-car in 1/8-scale buggy history. The Burns established the benchmark for the big buggies and spawned the Inferno, Kyosho's top winner—IFMAR champ since '92.



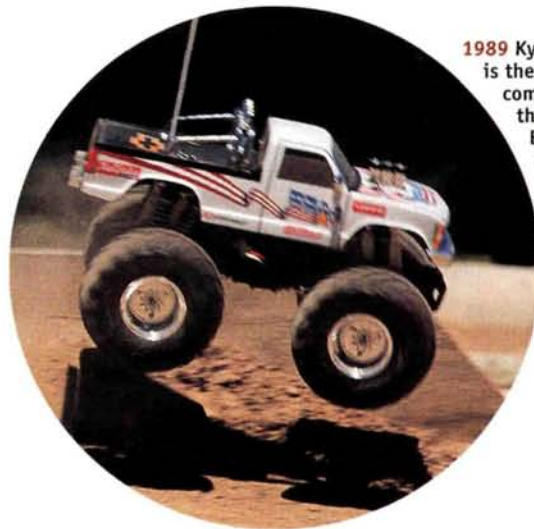
1991 TEAM LOSI JUNIOR 2

If you wanted to race on a budget in the early '90s, the Junior 2 was the machine to get. Sure, it was a good value with its ball-bearing tranny and aluminum shocks, but the J2's most important feature (and the one that lands it on this list) was its molded chassis. Team Losi was the first to bring an effective, race-worthy plastic chassis to RC, and the design (with a few revisions) went on to become the platform for Losi's flagship of the time, the JR-X Pro SE.



1990 TEAM LOSI JR-XT

Tamiya's Blackfoot and King Cab kits were instrumental in the success of RC truck racing (or monster truck racing, as it was called back in the day), but this is the machine that put truck racing on the map: the Team Losi JR-XT. The flatbed version of the JR-X buggy wasn't a mere conversion, but a purpose-designed rework that included a stretched wheelbase and extra-wide suspension arms. The JR-XT won everything, and truck racing officially became A Big Deal.



1989 Kyosho's USA-1 is the only real competitor for the Tamiya Clod Buster. Kyosho still sells a ton of them every year.

Radio Control Car Action turns 5. The RC Thunderdrome was the biggest oval event of the '80s.



1991 Trinity was the first to build a stock motor designed according to ROAR's then new, stock-motor rules, which called for 24-degree timing. When everybody else was simply rolling back the timing on the endbell, Trinity built the now classic slotted-armature design that revolutionized stock-motor performance.

1989 Team Losi enters the off-road arena with its first buggy: the JR-X2.

1991 Associated's RC10T is another nail in the coffin of monster-truck conversion kits.



1991 Traxxas TRX-1. Before conquering the ready-to-run and entry-level scene, Traxxas went head to head with Associated and Losi on racetracks everywhere. Will they race again?



1988 First release of the Tamiya Clod Buster. A genuine classic (and a new class of RC) is born.

1990

1991 Tekin releases the TSC410K, the first key-pad-programmable ESC.

1991 HPI launches its first kit, an F1 car dubbed simply "Super F1." The car is a hit with the open-wheel faithful.

1991



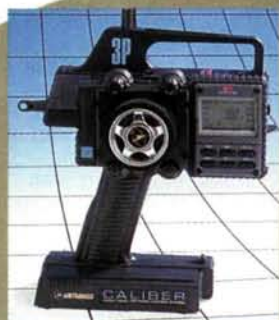
1992 TAMIYA TA01

Sure, RC has always had its on-road classes, but the core of the hobby was off-road. If you were just into fun-time RC, you ran off-road. That began to change when Tamiya revamped the Manta Ray 4WD buggy by giving it narrow suspension arms, shorty shocks, low-profile tires and a Nissan Skyline body. The touring car was born, and the hobby was changed—not instantly, perhaps, but quickly enough. The kit's sales were a slow burn for a while, as the sedan scene was considered an also-ran to the parking-lot kings of the day: F1 cars. Now F1 has all but vanished, and sedans reign supreme.



1994 ASSOCIATED RC10GT

Associated ignited the nitro-truck racing scene with the RC10GT—quite possibly the most popular nitro truck ever. Gas conversions for Associated's RC10T had been around, but the production truck brought nitro-truck performance to a new level. The GT instantly became the number-one competition truck, and scads of 'em showed up in backyards as well. The GT remains Associated's best-selling kit, and it's still the front-runner on the national circuit.



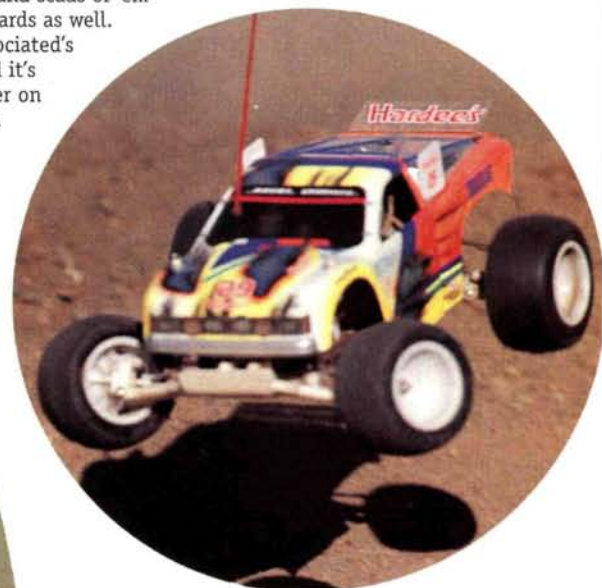
RADIO DAYS

Futaba's 2F "brown box" wheel radio was the standard RC car transmitter into the early '80s; it established wheel control as the standard for RC car controllers. Futaba was not the first to add a pistol grip to the mix, however; that innovation came from KO Propo,

which released the first pistol-grip radio in 1983. The radio was imported by Kraft and sold under that brand name.

KO was also behind the next big leap in radio technology: pulse code modulation, or PCM. Unlike AM (amplitude modulation) or FM (frequency modulation) systems, PCM allowed the use of a "fail-safe" system to prevent run-aways if the car was driven out of range or encountered some kind of interference. PCM systems were simply more reliable and offered much better reception.

In 1992, the final element of modern radio technology first appeared: programmable microprocessor control and LCD screens. Led by the Airtronics Caliber, JR 756 and KO EX-10, the newer pistols of the '90s incorporated more adjustable features than ever, with settings that were easily confirmed via alphanumeric displays. The non-volatile computer memories also allowed settings to be stored and retrieved ("model memory"), so one radio could be used for multiple models without retrimming. Radios have come a long way since the old "brown box" days!



1993 TRAXXAS NITRO HAWK

The unsung Nitro Hawk deserves a spot in history as the other half of the great nitro-truck boom. For every experienced RC buff who was committed enough to the hobby to pony up for an RC10GT, the required engine, manifold, pipe, clutch and other accessories—and who was skilled enough to assemble it all—there were other hobbyists looking for an all-in-one package that was cheap and fast. The Nitro Hawk filled that role nicely. It became a top seller and for many enthusiasts, their first nitro car.



1995 Tamiya reconfigures its Manta Ray 4WD buggy as a narrow sedan in Nissan Skyline trim. The car is largely ignored, but a few guys start racing them. The touring-car movement soon kicks into overdrive.

1996 HPI hits the sedan scene with the first RS4. It is an immediate hit.

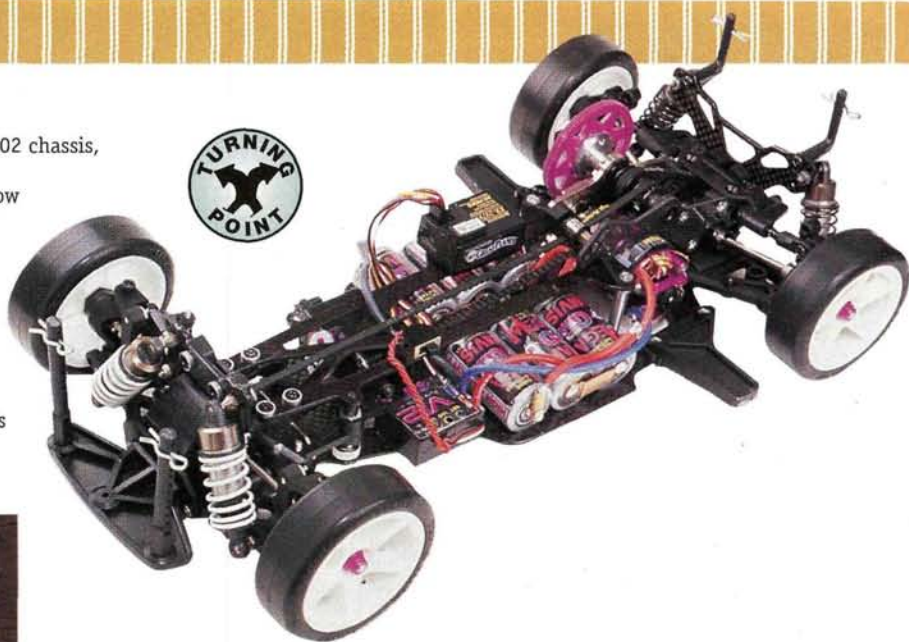
1996 Associated finally retires the tub-chassis RC10 and debuts the new "B" series with the RC10B2.

1997 Panasonic reaches a new high-water mark in Ni-Cd cell capacity—1700mAh. Some fear the new super cells will hurt racing.

1992

1996 HPI RS4

Tamiya owned touring cars with the TA01 and TA02 chassis, but the borrowed off-road technology was soon eclipsed by a radical new design from HPI: the now classic RS4. With its sleek, black fiberglass chassis and deeply angled aluminum shocks, the lean-and-mean RS4 looked like a racecar. The car was all attitude and performance. Forward-thinking features included adjustable width and wheelbase, but the 3-gear rear transmission was an anachronism. HPI soon moved to a dual-belt arrangement (as seen here on the RS4 Pro), and the rest, as they say, is history.



1994 TEAM LOSI DOUBLE-X

As the '80s unrolled into the '90s, Team Losi's JR-X2 evolved into the JRX-Pro and Pro SE. In tit-for-tat style, the Associated RC10 also changed to reflect the needs of racers and ever higher performance expectations. But in 1994, Losi dropped a bombshell that rocked off-road. The Double-X was an excellent clean-sheet design that was innovative and easy to drive. It marked the debut of such features as raised chassis sides, modular construction, "lay-down" tranny gears and molded shock towers (common in entry-level cars, but new to competition machines).



1999 LOSI XXX

Team Losi redefines the electric racing buggy once again with the ground-breaking Triple-X. The new car is already a huge success on the national circuit and is the hot car to have on the local scene. Shorter shocks for a lower CG, a sleek "Coke-bottle" chassis, improved servo access, "Advanced Geometry Design" zero-bump-steer bell-cranks, and radical up-front camber-link placement are just a few of its interesting and functional features.



1996 Ten years of Car Action!



1997

Novak introduces the programmable Cyclone ESC and Pit Wizard software, soon followed by the hand-held Pit Wizard. The system essentially allowed racers to design their own ESC—a true breakthrough.



1999 Sanyo and Trinity reach a new high-water mark in Ni-Cd cell capacity—3000mAh. Some fear the new super cells will hurt racing.



1999 Trinity produces the first rebuildable stock motor: the Paradox.



1997 Sanyo reaches a new high-water mark in Ni-Cd cell capacity 2000mAh. Some fear the new super cells will hurt racing.

1997 Team Losi wins the 2WD IFMAR Off-Road Worlds: its first world championship.

1998 David Spashett becomes the first driver to simultaneously hold 1/10- and 1/12-scale IFMAR on-road titles. He also wins the exhibition touring-car event to become the de facto touring-car world champion.

1999 Masami Hirosaka wins his 17th IFMAR Worlds title by taking the 2WD victory at the Off-Road Worlds in Finland.

1999

The First World Champions

Featured here are the winning cars from the first-ever IFMAR (International Model Automobile Racing Federation) Off-Road World Championship. The race was held at The Ranch Pit Shop in Del Mar, CA, a sister shop to the Pomona Ranch Pit Shop operated by Gil Losi Sr. (interesting side note: the Del Mar shop is near Variflex, the successful skateboard company that Gil launched and that still exists). It was here, in 1985, that the first-ever, off-road, world-champion titles were handed out. But the Worlds was a different event then; at that time, there were stock and open classes instead of separate 2WD and 4WD classes. The stock class required a 2WD car, but the open class was exactly that: open. Both 2WD and 4WD were allowed to compete.

by Steve Pond

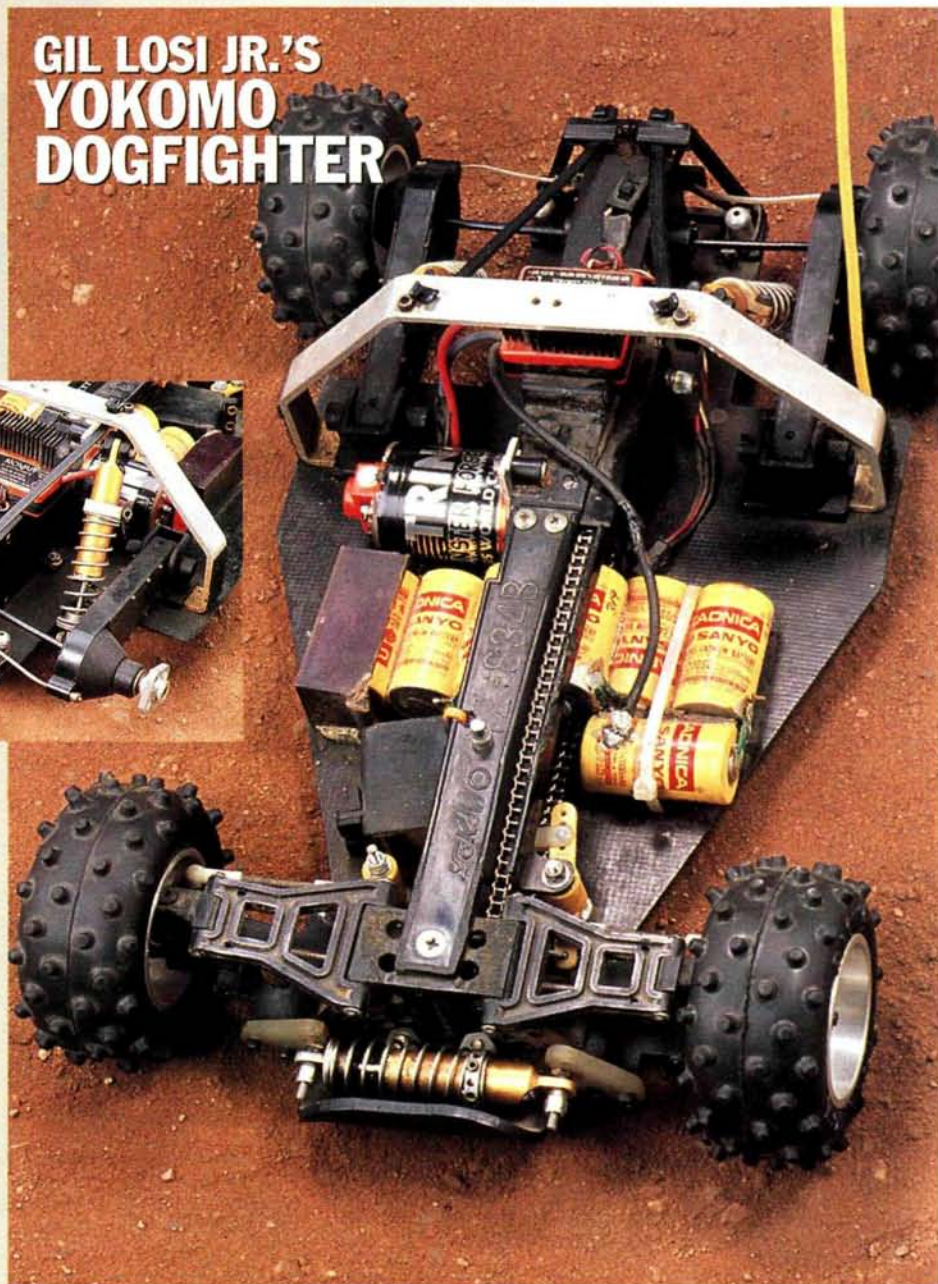


Gil Losi Jr.'s Yokomo Dogfighter wasn't as new or as cutting edge as the RC10, but it was a highly desirable car in its day. The Dogfighter was the first in a long-standing series for Yokomo, whose bloodlines extend to Yokomo's present-day 4WD buggies.

The venerable Dogfighter held on to the suspension technology that the RC10 eschewed; it featured incredibly long trailing arms in the rear and A-arms up front, damped by a single shock. Curiously, an anti-roll bar was absent from the front suspension. Without it, the monoshock configuration was free to cycle from side to side without ever involving the shock, which wouldn't actually start working until both the front suspension arms were loaded at the same time. The top ends of the rear shocks were mounted to what has to be considered the oddest shock tower in RC history. The horseshoe-shaped aluminum strap arched from one side of the car to the other, and the tops of the shocks were bolted to it. At first glance, it appeared that the piece would collapse because nothing was supporting it where the shocks would apply the most pressure. Fear not, though, because Yokomo solved that with a pair of zip-ties. Yup; the rear shock tower was braced against the force of the rear shocks with zip-ties! As odd as this configuration may seem, it worked—and very well, I might add. After all, the Dogfighter was the dominant 4WD car of its time.

Compared to today's cars, the Yokomo's drive train appears no less dated than its suspension. A wire-link chain does the job; no belts or shafts, just a trusty ol' chain. The chain drive was actually considered to be very efficient but not entirely suitable for the beating a competitive off-road car was expected to take. It tended to stretch under heavy loads and certainly wasn't immune from jumping the diff sprockets. The front drive system featured one-way bearings in the wheel hubs and an otherwise direct-drive system. The rear end benefited from a ball differential.

GIL LOSI JR.'S YOKOMO DOGFIGHTER



Gil's car was powered with a 7-cell Sanyo 1200-SC pack, a Novak 1 ESC and a Trinity modified motor. As near as we (Trinity and I) can tell, it looks to be about an 18-turn double—16 turns, at the very least. This was considered a very hot modified motor. Gil Jr. also equipped the car with a graphite chassis plate and Delta aluminum shocks.



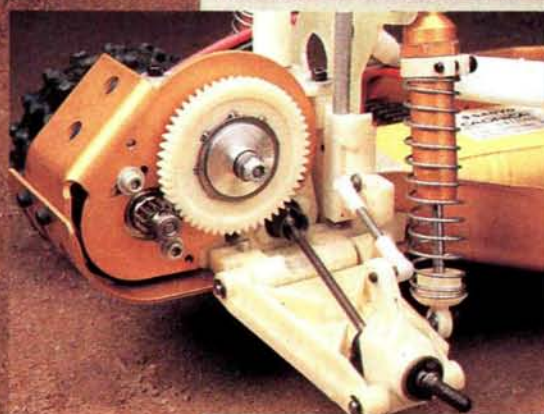
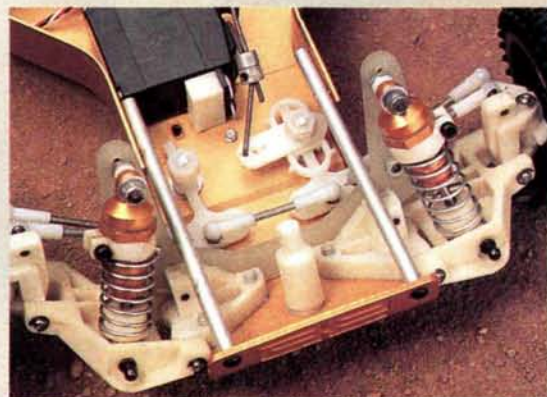
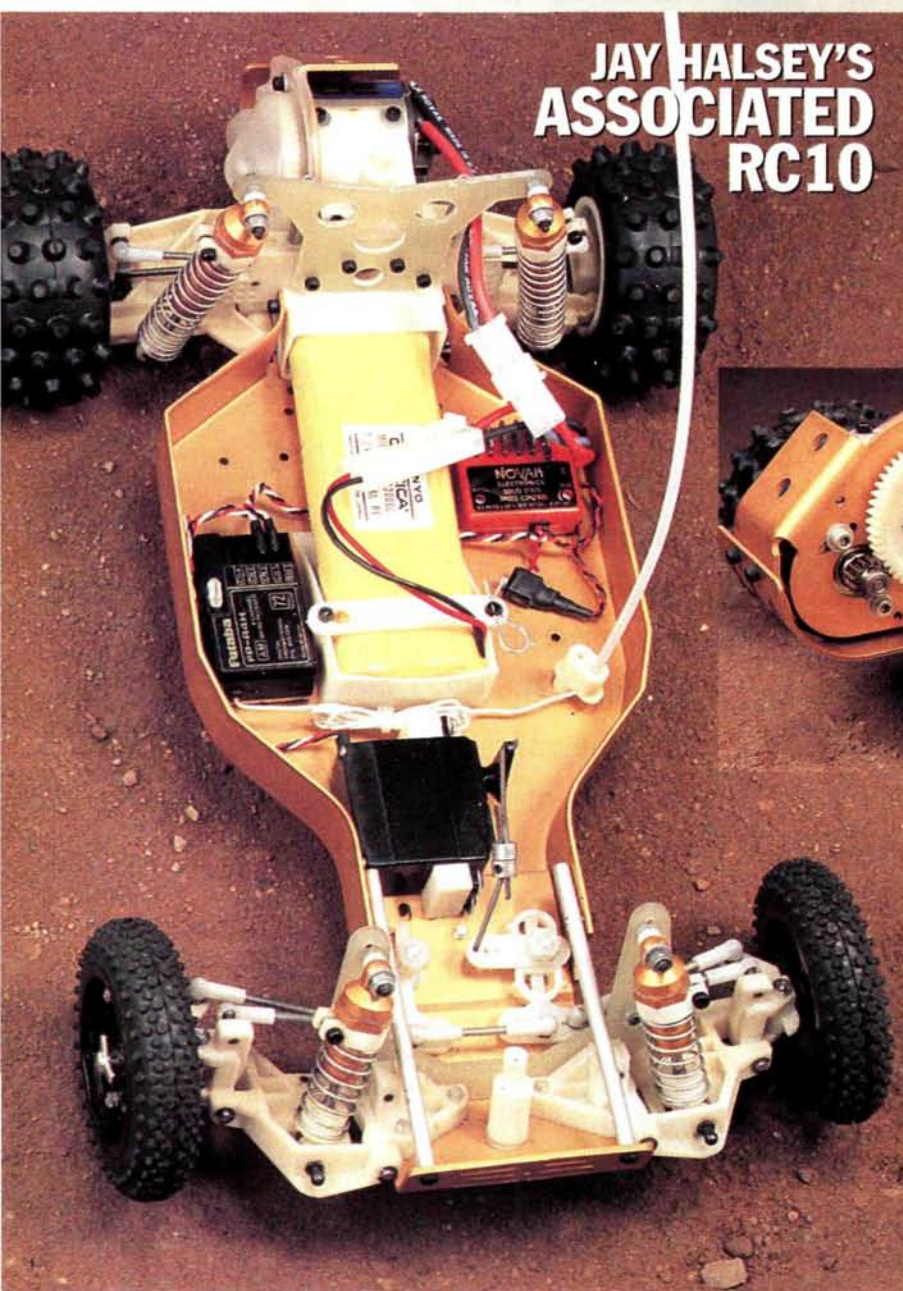


1985's Fastest!

"Stock" champ Jay Halsey's Associated buggy is an original RC10 from 1984—a design introduced only a short time before the Worlds, when off-road racing was dominated by the Cox Turbo Scorpion and a smattering of Tamiya cars. It was a revolutionary design that included a ball differential (a first for a production 2WD off-road car) and, by 1984 standards, a very low-drag transmission. It featured six gears with a very elaborate two-piece upper shaft. The differential was mounted to the shaft outside the transmission housing where you would normally find a slipper clutch on a modern transmission. Although it was very difficult to assemble properly, and it wasn't very smooth by today's standards, it was the best money could buy at the time.

The aluminum-tub chassis

JAY HALSEY'S ASSOCIATED RC10



was also new to RC cars. The prevalent technology in those days was an aluminum ladder frame; basically, two aluminum rails that ran the length of the car. Also significant was the suspension system; in an era of trailing-arm designs, the RC10 had A-arm suspension and massive (by 1984

standards) oil-damped, coil-over shocks. The A-arm concept was so revolutionary that a company called A&L (Allec & Lane) made a healthy living offering rear trailing-arm conversions for the RC10 for those who weren't willing quite yet to part with the suddenly dated technology. Another biggie was the adjustable upper links—not turnbuckles, but simply threaded rod. This required popping the ball end every time an adjustment was necessary, but the adjustable rods were a revelation compared to fixed links. Halsey's RC10 was equipped with a Team Associated stock-class motor that drew from the same rules we abide by today in stock-class racing: 27 turns of 22-gauge wire. A Novak 1 (not a T1, just a "1") speed control—the first electronic speed control—was also installed. This was a radical improvement over the power-robbing, grossly unreliable wiper speed controls of the day. Sanyo 1200SC Ni-Cd batteries powered the championship car.

THE END OF THE BEGINNING

These cars figured significantly in RC car history. It sounds odd to characterize them as "historical"; to those of us who lived for RC back then, it seems as if that first Worlds was held just a few years ago. In fact, some 15 years have passed, and it can be a real eye-opener to look back at how far our hobby/sport

has come. Even for us "old-timers," taking a close look at some of the significant, historic cars always puts things into perspective. The vintage Worlds winners seen here illustrate the progress that the hobby—and the technology that drives it—has made. Enjoy it; it's a great time to be into RC. ■

sneak



PEEK

Go-anywhere **Nitro 4x4**

by Peter Vieira

Hobby Products International, much better known as HPI*, first achieved fame by producing cutting-edge entries in existing categories such as open-wheel racers (the knockout Super F1) and touring cars (the RS4 series, of course). HPI has also been known to break new ground, as evidenced by the RS4 Rally and RS4 MT, which brought a whole new look to off-road 4WD. The MT is the jumping-off point for HPI's latest project—a nitro version of the popular 4WD truck. But the new machine won't be a retrofitted electric truck; although suspension pieces may look familiar, the chassis and driveline are all new.



HPI RS4



FEATURES

HPI allowed us an exclusive first drive of a "test" version of the Nitro MT—a hand-built truck designed to prove the shaft-drive concept before HPI tools up for production. The chassis doesn't look finished and doesn't represent the components' final design. HPI understandably declined to release photos. The Nitro MT will include:

- Double-deck chassis (aluminum lower deck, molded upper deck).
- Full bearings.
- Shaft drive (the spur gear and disc brake are mounted on a center bulkhead that is joined to the front and rear gearboxes via dogbones).
- Gear differentials.
- Plastic, oil-filled shocks and extra-wide suspension arms
- Pull-start HPI .15 FE engine.
- New, chrome, split-spoke rims.
- Pro-Line Dirt Hawg tires.
- Fixed camber links and threaded links, so you can decide whether you want convenience or adjustability.



Nitro MT

WE DRIVE IT!

Despite its hand-built prototype status, the Nitro MT we drove was just about bombproof, and we drove it hard. As you might expect of a softly suspended, big-tire truck with full-time 4WD, it's super-stable. It's easy to adjust its in-air attitude, as those big tires act like huge gyroscopes. We had no trouble leveling it off in flight or dropping the nose with a touch of brake for perfect back-side touchdowns, and the Nitro MT loves to be pitched sideways for dirt-roosting power slides. All it took to get the truck straightened out was a handful of throttle, and the single disc brake was an effective stopper. Our only gripe was with the test engine's carb, which lacks a low-end needle. We couldn't get the engine to deliver the super-crisp bottom-end response we prefer, but there was plenty of power on tap once the revs had come up. On the plus side, the fixed low-end needle guarantees that first-timers won't goof up the setting.

WANT ONE?

We like the electric RS4 MT, but the addition of nitro power and dirt-friendly shaft drive sends HPI's 4WD truck concept right over the top. The Nitro MT is a lot of fun and easy to run, and it's sure to be even more rugged once it's in production. It should also be affordable, if HPI's history with other kits is any indication. We'll keep you posted as the truck enters production, but meanwhile, we think the RS4 Nitro MT sets a new high-water mark for fuel-powered 4WD fun.

**Addresses are listed alphabetically in the Index of Manufacturers on page 241.*

TRAXXAS INSANE NITRO BUGGY

TAMIYA TRUE-BLUE CLOD

BOLINK CHEAP-SPEED DRAGSTER

TAMIYA WIDE-TRACK FORD F-150

MUGEN ULTIMATE PRIME 12

5



HOT MOD-MOBILES

by the Staff of *RC Car Action*

No RC car stays stock for long. That's part of the hobby's appeal; your car is your own personal statement, even if the only "mod" you make is the paint job you choose. Most of us make at least a few additions and changes to our vehicles to increase durability, enhance performance, or just make 'em look a little cooler. Then there are those who feel compelled to transform their machines, and that's where "project" vehicles come into play. The crew at *Radio Control Car Action* always have project machines cookin', and this month, we bring you five of our latest creations. There's something for everyone, and because we know you'll see something you just gotta have, we've included all the info you'll need to get your hands on the hop-ups. Enjoy.

TAMIYA TRUE-BLUE CLOD

by Doug Huse



SHOULD YOU BUILD ONE?

Do you want the coolest monster truck around? Do you want to be the envy of all your friends? Do you want unstoppable performance and power? If you answered "yes" to any of these, then by all means, start ordering! Really, anyone with a Clod should consider getting an aftermarket chassis kit and some oil shocks—at the very least. Your truck will be transformed!

You may have noticed that few original parts remain on my Clod, which leads to this very common question: do I need to buy a complete Tamiya Clod Buster kit, or can I save money and buy the parts individually? The answer is "yes," but it's really not worth the meager savings. The cost of buying all of the parts to complete the ESP chassis kit separately is relatively close to the price of an entire Clod kit. It's worth spending the extra few bucks for the complete kit for the "bonus" of spare hardware and the hard plastic body.

SETUP

- Futaba 3PD FM transmitter.
- Futaba R113f receiver.
- Futaba S9304 steering servo.
- Tekin Titan reversible speed control.
- Dynamite 5-cell receiver battery pack.
- Trinity 2000mAh matched batteries.
- Trinity Speed Gem Sapphire 17T single-gear motors.

Tamiya's* Clod Buster is without a doubt the coolest, biggest and baddest electric-power monster truck ever offered for RC, and it's easily the best supported with factory and aftermarket hop-ups. It seems every Clod soon sheds its plastic chassis, friction shocks and bushings for more exotic parts, so it takes something really special to impress the typical monster-truck guy. Since I am the self-proclaimed king of hop-ups, my Clod has to have looks that will leave even the most jaded monster trucker green with envy—or blue, as the case may be. And if the truck turns out to be faster, more powerful and stronger than ever, that's OK, too!



I couldn't see bolting together the beautifully anodized chassis parts with plain ol' black hardware, so I used stainless parts from Micro Fasteners. Team Losi Hard Body shocks are excellent performers in monster trucks.

HOP-UP PARTS

- DURATRAX Clod Buster bearing set—part no. DTXC1070. ■ ESP Clodzilla IV Racing chassis set—048. Twin Tube lower bumper—003. ■ JPS Machined-aluminum wheels.
- MICRO FASTENERS Stainless-steel hardware. ■ MIP Gold shock shafts—1052. ■ PARMA Bigfoot body. ■ PRO-LINE Giant Traction tires—1056. ■ TAMIYA Blue-anodized 4mm wheel nuts—53159. ■ TEAM LOSI Hard Body shocks—A5034. Orange springs—A5154. ■ 12-PAK Chassis polishing and anodizing.

BEHIND THE WHEEL

"Unstoppable" is the first word that comes to mind! Trinity horsepower coupled with the supple, long-travel suspension from an ESP chassis upgrade make this beast capable of doing anything! Not only will it climb, but you can also toss some rocks, trees and other cars in its path, and the high-tech Clod will just scamper right over them. The chassis kit also includes swaybars to keep chassis roll under control during high-speed cornering, and after numerous attempts, I've yet to roll the Clod over in a turn. With the speed control wired for two battery packs, average run time is 20-plus minutes. Not bad for a big, burley electric truck!

TRAXXAS INSANE NITRO BUGGY

by George M. Gonzalez

I could have chosen several cars and trucks in my arsenal to represent my coolest, most wildly hopped-up R/C vehicle, but after hours of pondering, I chose my Traxxas® Nitro Buggy. Here's why: it's a genuinely fun vehicle because it can be run just about anywhere; it's an excellent scale representation of a single-seat 2WD off-road buggy; it has a separate molded roll cage that looks good and also provides excellent engine cooling; and it has a big rear wing that is actually functional.

The Traxxas Nitro Buggy has been around for nearly a decade and has undergone many improvements along the way. A full set of ball bearings and a potent TRX Pro 15 engine are included; you could say Traxxas has already started to hop up the buggy for you! I decided to build an awesome all-purpose R/C car using the Traxxas Nitro Buggy as a foundation.



SHOULD YOU BUILD ONE?

I say yes! The Traxxas Nitro Buggy is definitely worthy of becoming your next project. The project's only difficult steps were drilling new mounting holes on the bottom of the chassis to reposition the fuel tank to accept the EZ-Start system and drilling holes on the sides of the chassis to accept the new chassis braces (the stock chassis brace was removed to make room for the fuel tank, which is now mounted slightly more forward). The other hop-ups are all bolt-on accessories available through Traxxas and other manufacturers, and that made the project fun and easy.

SETUP

- Futaba FP-S148 standard throttle/brake servo.
- Hitec HS-6058B high-speed/torque steering servo.
- Kimbrough large-scale servo-saver.
- Team Losi Orange front springs.
- Team Losi Pink rear springs.
- Team Losi Certified Shock Fluid (45WT/50WT F/R).
- Pro-Line Rally Haws tires front and rear (not shown).
- O.S. CV .12 carburetor.
- Team Orion 1000mAh NiMH 5-cell receiver pack.

BEHIND THE WHEEL

In a nutshell, my hopped-up Nitro Buggy is faster, more reliable, handles better and is more user-friendly. The Stinger tuned-pipe and header allow the engine to perform at its best and is the most notable hop-up I installed. I also like that the Stinger exits toward the rear of the vehicle; this directs the exhaust away from the chassis and tires and looks very scale. The O.S. carb also makes a big difference: I can make more precise mixture adjustments. The optional TRX Pro ball diff, hard-anodized and Teflon-coated Big Bore shocks and Pro-Line tires all contribute greatly to the buggy's new handling prowess, and starting the vehicle with the Traxxas EZ-Start system is simple and even fun.



Titanium tie-rod braces help stiffen the tub chassis. The tire insert around the tank soaks up any spilled fuel during fillups.



HOP-UP PARTS

■ **TRAXXAS** Long-race front suspension arms—part no. 1931R. Race stub axle housings—2752R. In-line steering blocks—2737. Pro ball differential—2520. Machined-Delrin 60-tooth diff gear—2519X; top gear—3195X. Machined-aluminum idler gear—1996X; flywheel—3143. Big Bore front shocks, long—2660; rear, XX long—2662. Graphite front shock tower—4708; rear—4710. TRX EZ-Start system—4570. Metal universal/dogbones—4670. ■ **MIP** Nitro boost bottle—3057. Stinger exhaust kit—3001. ■ **LUNSFORD** Titanium tie rods. ■ **GENERAL SILICONE** Fuel line and tuned-pipe coupler. ■ **DU-BRO** In-line fuel filter. ■ **FMA DIRECT** 4-cell Ni-Cd receiver battery pack. ■ **OFNA** Blue-anodized aluminum ball ends. Blue-anodized 3mm and 4mm locknuts. ■ **RPM** RC10 front oval bumper (modified to fit the Nitro Buggy).



TAMIYA WIDE-TRACK FORD F-150

by Peter Vieira



SHOULD YOU BUILD ONE?

If you want your Tamiya 4WD stadium truck to handle as well as it looks, you should definitely assemble your own wide-track truck! But feel free to skip all the high-tech upgrades and just get the basics: dogbones, camber links and suspension arms. That's all you really need to get the benefits of the wide-track setup; everything else is just gravy!

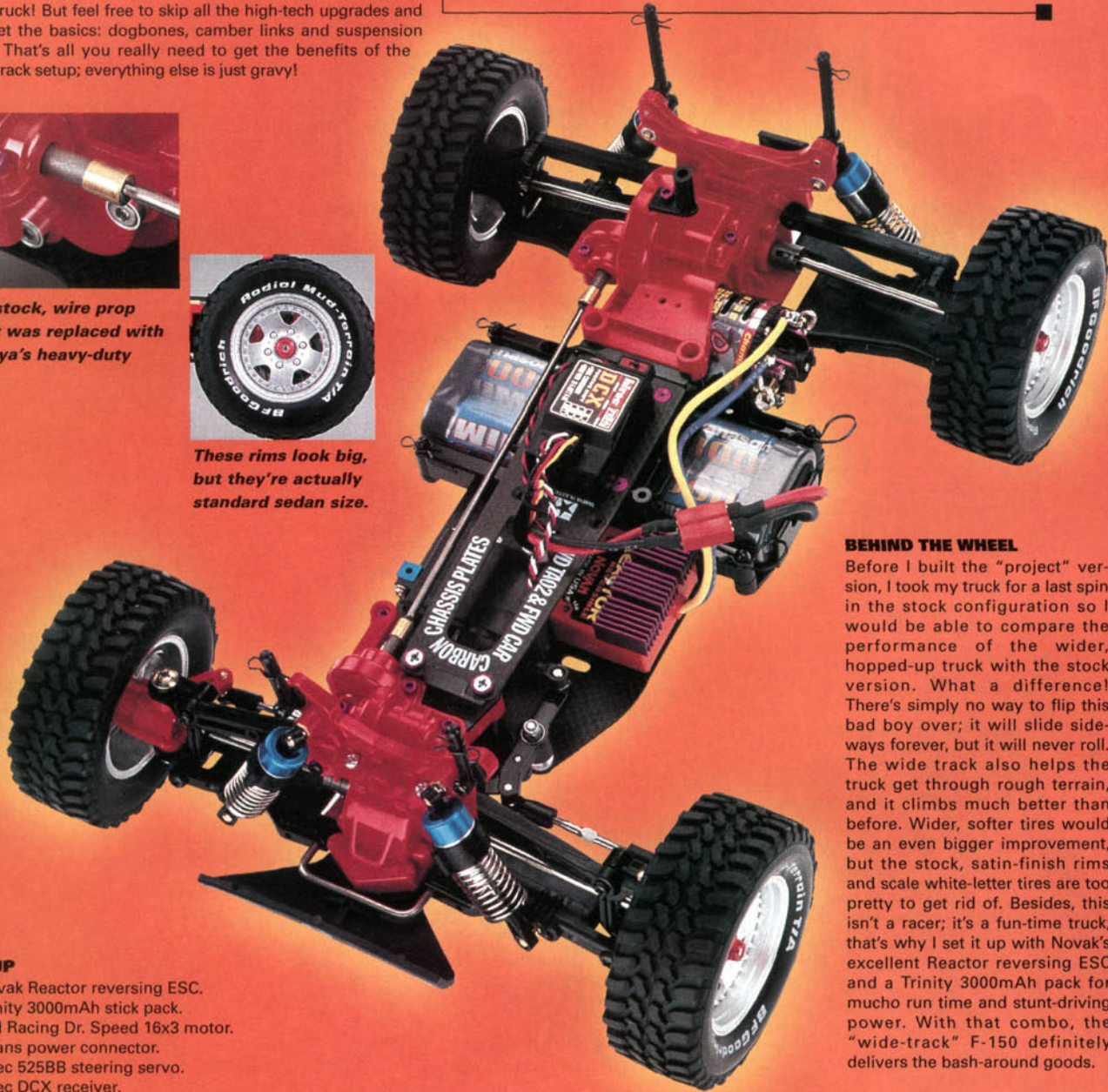


The stock, wire prop shaft was replaced with Tamiya's heavy-duty unit.



These rims look big, but they're actually standard sedan size.

For authentic off-road action in a 1/10-scale, 4WD desert racing truck, nothing tops Tamiya's* Ford F-150 and Chevy S10 kits; they include super-detailed bodies and some of the most realistic wheels and tires to hit the dirt. Both trucks are popular with enthusiasts looking for true-to-life off-road excitement, but the TA02-based chassis is narrow, and, combined with high-profile tires, it delivers a high center of gravity and a tendency to roll in all but the gentlest turns. I set out to build a wide-track F-150 by combining the long suspension arms and camber links from Tamiya's Blazing Star buggy (which is mechanically identical to the old Manta Ray and Terra Conqueror). But I couldn't stop there, of course; a "project" car has lots of other goodies to boost its strength, durability and the all-important cool factor.



BEHIND THE WHEEL

Before I built the "project" version, I took my truck for a last spin in the stock configuration so I would be able to compare the performance of the wider, hopped-up truck with the stock version. What a difference! There's simply no way to flip this bad boy over; it will slide sideways forever, but it will never roll. The wide track also helps the truck get through rough terrain, and it climbs much better than before. Wider, softer tires would be an even bigger improvement, but the stock, satin-finish rims and scale white-letter tires are too pretty to get rid of. Besides, this isn't a racer; it's a fun-time truck; that's why I set it up with Novak's excellent Reactor reversing ESC and a Trinity 3000mAh pack for mucho run time and stunt-driving power. With that combo, the "wide-track" F-150 definitely delivers the bash-around goods.

SETUP

- Novak Reactor reversing ESC.
- Trinity 3000mAh stick pack.
- GM Racing Dr. Speed 16x3 motor.
- Deans power connector.
- Hitec 525BB steering servo.
- Hitec DCX receiver.
- KO Propo EX-11 Mars transmitter.

HOP-UP PARTS

■ **TAMIYA** Blazing Star "D" parts (includes suspension arms and camber links)—part no. 0005378). Blazing Star dogbones—9805370/MB8. TA03 super low-friction damper, silver and blue (set of four)—49099. 4WD/FWD touring- and rally-car bushing and ball connector set—53144. Touring-car hard-joint cup set for gear diff—OP-218. 4mm anodized-aluminum flanged locknuts (red)—OP-160. Short, hard propeller shaft—OP-152. 4WD touring- and rally-car aluminum motor mount—53142. Aluminum servo mounts (blue)—49092. 1150 sealed ball-bearing set—53008. ■ **TRINITY** Blue 4-40x1/2 Allen screws—TK3055. Aluminum wheel adapters—TA108.

by Derek Buono

MUGEN ULTIMATE PRIME 12

My first experience with Mugen's* capable Prime 12 was in July of 1998. In box-stock form, the car was quick and handled well. With Mugen Seiki's competition-oriented performance philosophy, it seems logical that it would release hop-ups to turn this platform into a race-winning rocket. Mugen recently released a slew of factory hop-ups that not only add to the car's performance, but they look fast, too.



SHOULD YOU BUILD ONE?

Let's face it: even though a manufacturer says something is a factory hop-up, that doesn't necessarily mean a huge performance gain; some of the stuff just looks pretty. Here are the critical hop-up steps: first, ditch the stock chassis for the sweet 3mm option, and get the machined-aluminum spur-gear mounts to beef up the braking system. Bearings are a must in any high-performance application, and the Prime 12 is no different—get 'em. The tuned pipe and 2-speed should also be included on your list. Any speed freak knows the advantage of a tuned pipe (more rpm and longer engine life), and the 2-speed snaps you into higher velocities. But, remember: although you can easily replace your car piece by piece until you have the "ultimate" Mugen Prime 12 pictured here, there is no substitute for practice. That's the one hop-up you'll never see in a polybag with a header card.

SETUP

- Mugen VX-12—V1200A engine.
- Mugen tuned pipe with hardware—K0901.
- Dynamite receiver battery.
- Futaba throttle servo—9304.
- Futaba steering servo—9450.
- Airtronics M8 radio gear.
- Pro-Line S3 slick tires.
- Protoform Ford Mondeo body.

BEHIND THE WHEEL

I tested the Mugen 12 at a new track opened by the town of Trumbull, CT. That's right: the town provides a space to race; imagine that! With a 2-speed, a tuned pipe and lightweight aluminum components, the Prime 12 became a certified rocket. The stiffer chassis provided more consistent handling, and braking improved as well (the original chassis actually twisted a little when the brakes were applied). With its impressive speed and swift handling, the Prime 12 seemed to compress the track.



The gold-brown finish on the aluminum suspension parts looks very businesslike. Tamiya dampers replaced the stock plastic parts.



You can't beat a two-speed for top speed; Mugen makes a nice one. Check out the vented disc brake, too.

HOP-UP PARTS

■ **MUGEN** Full bearing set—part no. K0605. Aluminum parts: Front arm—K01022; rear—K01021. Anodized 3mm chassis—K0404. Rear upright—K01051; Steering knuckles—K01041. Front hub carrier—K0103. Spur-gear mount—K01071. Foam front bumper—K0405. Engine mount, 16mm—K0711. Lightened flywheel—K0710. 2-speed transmission—K0240. Carbon-brake disc and hub—P0012. Hard-joint cup—P009. Carbon tower, front—P010; rear—P011. Sway kit—P019. Suspension shaft, front—P007; rear—P008. ■ **TAMIYA** TA03 Super-low-friction dampers—53280. ■ **KYOSHO** Receiver cover—KYOC4886.

BOLINK CHEAP-SPEED DRAGSTER

by Peter Vieira

I've always thought that RC dragsters are impressive, but their one-run nature relegated them to the "once-in-a-while" stable. You see, I like to play with everything; if I can't turn a car around and drive it back, swap the battery pack, then go out for another run without tweaking something, I just can't get into it. That's why I decided to build a dragster that I'd be able to launch repeatedly without worrying about feeding brushes to the motor or dumping and reapeaking a glued-in pack. Bolink's cheap and fast Econo Rail kit was the basis for the project, and even with some A-list parts, it still takes only a small bite out of the budget!*



SHOULD YOU BUILD ONE?

If you have a smooth stretch of pavement to run on and a need for speed, by all means, build a drag car. The Cheap-Speed formula of two stick packs and a machine-wound mod works great, and the Econo Rail kit couldn't be easier to build. Getting the stick packs into place required some minor surgery (I had to drill holes for zip-ties to secure the battery packs), but otherwise this project was a bolt-together affair. A word of caution before I sign off: a 65mph RC car is a serious piece of gear that should be treated with respect. Check fasteners for tightness between runs; always be certain your transmitter batteries are fully charged; keep bystanders safely away from the driving area; and don't even think about running the car near "real" vehicles, people, pets, or any personal property that could be damaged by your machine. Have fun—but safety first.

SETUP

- Trinity Speed Gems Garnett 13x1 motor.
- Trinity EX-Tech 2000 stick packs (2).
- Tekin TSC G12 ESC.
- Hitec 535AG miniservo.
- Futaba Magnum FM transmitter.
- Futaba R123F receiver.



Most dragsters use 1/2-scale rims with big, soft donuts, but I wanted something tougher. HPI's great-looking chrome rims with mounted green foam got the nod.

BEHIND THE WHEEL

I went out for my first run with the Cheap Speed on an extremely windy day—20mph gusts blasted across my drag strip (a deserted parking lot). I was afraid the large side dams of the Kimbrough wing would cause the car to blow over, so I removed the wing before my first squeeze of the trigger. The rail was impossible to launch; although I could gently apply throttle to get the car rolling, it would get sideways when I tried to open it up. I decided to take my chances with the wing. It still took a light touch to get the car rolling, but once some airflow passed over that barn door, I was able to clamp the throttle for some hair-raising speed. With two Trinity stick packs in place, Cheap Speed snaked past the RC Car Action radar system at 65.9 mph and was good for about six runs before the batteries flattened out enough to damp the fun. With a single pack, the rail still clocked in consistent 40mph+ runs. Slowing the car down was almost more exciting than spooling it up; I was afraid of driving the car out of radio range (easy to do at 65mph), so I grabbed big handfuls of brake as soon as the car's speed peaked. It would get sideways like a sprint car, but it never high-sided (thanks, no doubt, to the low-profile pan-car tires. Real drag rubber would have been a different story!).



The Lego set on top of the cells is a collection of Acer Racing connectors used to hook up the packs in series. The adapter can be removed for single-pack running. The Tekin G12 ESC never hiccuped despite the 12-cell abuse.

HOP-UP PARTS

- ASSOCIATED Factory Team blue wing buttons—part no. 6193B. ■ TRINITY Purple 4-40x1/4 flat-head screws—RE1044. Purple 4-40 mini locknuts—EVD143. ■ KIMBROUGH Black molded wing—328. ■ HPI Chrome rear rims with Green-compound foam tires—4130. ■ DU-BRO Swivel ball link (2-56)—367. Threaded ball links (2-56)—2162. ■ DURATRAX Front wheel bearings (1/8x3/16 in.)—DTXC1403. ■ ROBINSON Absolute spur gear, 88T—RRP1788. Absolute pinion, 17T—RRP1417. ■ TEAM LOSI Prebent wing wire—A-8101. ■ JPS Front drag wheels. ■ ACER RACING Power pole connectors.

*Manufacturers mentioned are listed alphabetically on page 241. ■

Become an INSTANT RC EXPERT

GETTING

by Peter Vieira

Every hobby and sport has a learning curve for newcomers.

Whether you're getting into tiddlywinks, comic book collecting, BMX, or (of course) RC, there is equipment to master and lingo to learn. I assume you know RC stands for radio control, but from here on, I'll indulge in only one other assumption: that you are a newcomer (I won't call you a "newbie") looking to learn about and become part of this great hobby. Are you fired up to join the fun? Here's what you need to know!

● SELECTING A VEHICLE

Part of what makes the RC car hobby great is the diversity of vehicle types to choose from. These are the basic "flavors"; match your sense of RC excitement to the terrain types listed to see which style is right for you. We also include "hot picks" that reflect popular choices—but not all the choices!

BUGGIES

Buggies represent the classic look of off-road RC, and they're a blast to drive. Very rough terrain bounces buggies around despite their long-travel independent suspension systems, but trails and smooth dirt are no problem. Most buggy kits are 2WD, but 4WD kits are also available.

HOT PICKS: Kyosho Outrage, Tamiya Baja Champ, Associated RC10B3 Sport, Team Losi Double-X Sport.



--- RALLY CARS

These are generally modified 4WD tourers that can handle mild off-road conditions, such as baseball diamonds and dirt roads. They have a bit more ground clearance and suspension travel, and most use some type of inner shell to protect the drive train.

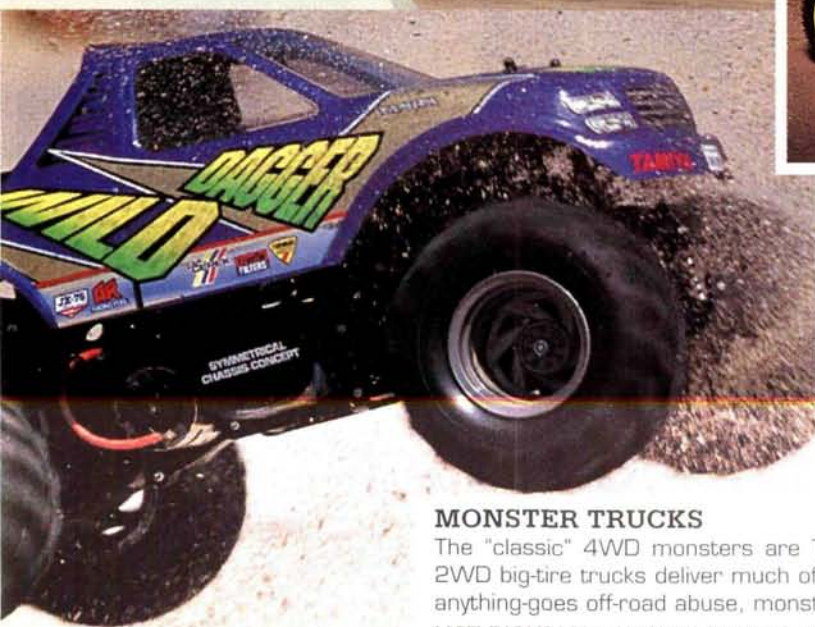
HOT PICKS: HPI RS4 Rally, Yokomo MR-4 Rally, Schumacher SST Rally, OFNA Z-10 Rally.



RACING/STADIUM TRUCKS

Closely related to buggies, racing or "stadium" trucks have fully independent suspension and the same type of chassis layout. However, for greater stability, they have more suspension travel and a wider stance than buggies. Stadium trucks use smaller tires than "monster" trucks for better handling. They're typically 2WD, but HPI has a 4WD model—the RS4 MT.

HOT PICKS: Associated RC10T3 Sport, Team Losi XX-T Sport, MRC MT-10S, Tamiya Stadium Blitzer, Kyosho Outrage ST.



MONSTER TRUCKS

The "classic" 4WD monsters are Tamiya's Clod Buster and Kyosho's USA-1, but less expensive 2WD big-tire trucks deliver much of the same look and performance. They're not very fast, but for anything goes off-road abuse, monster trucks can take it all.

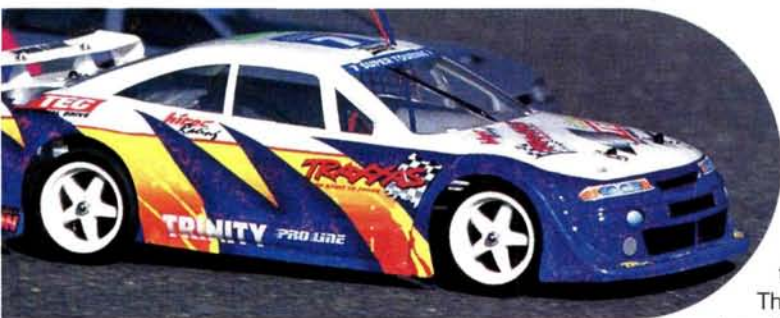
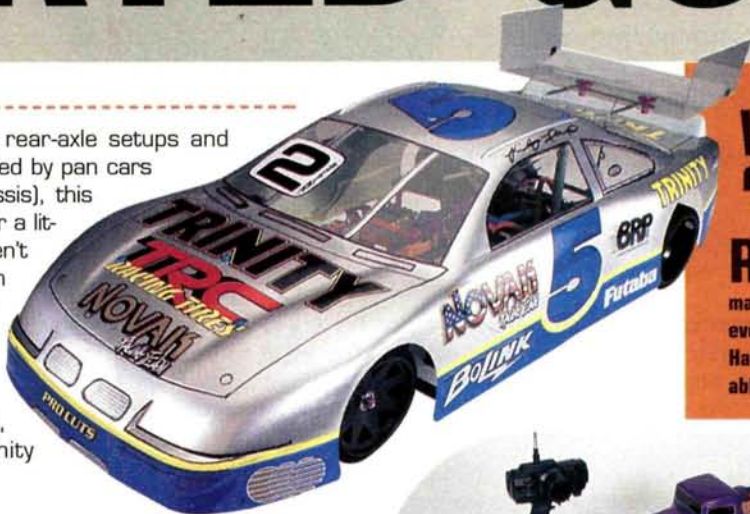
HOT PICKS: Tamiya Wild Dagger, MRC Ironman, Kyosho Tracker, Traxxas Stampede.

STARTED GUIDE

PAN CARS

Thanks to the simple direct-drive, rear-axle setups and rudimentary suspension systems used by pan cars (so named for their flat, "pan" chassis), this type of vehicle delivers lots of "go" for a little "dough," but be warned: they aren't very durable and should be run on smooth pavement only. Body choices for pan cars include touring-car styles, NASCAR racers and low-slung IMSA types.

HOT PICKS: Bolink Sport 2000, Associated RC10L3 Touring, Trinity Street Spec.



for very high speeds, and they're generally durable. Touring cars, however, are bound to the pavement and not meant for off-road use.

HOT PICKS: HPI RS4 Sport, Traxxas 4-Tec, Tamiya TAO3, Tamiya TLO1, Schumacher SST Sport, Yokomo MR-4TC.

TOURING CARS

This red-hot segment of the hobby is still growing. The realistic cars offer easy-handling 4WD, can be equipped

WHAT ABOUT "RTR"?

Ready-to-run (RTR) cars are nothing new, but the latest RTR machines are more complete than ever before. For example, MRC's Hammerhead (shown below) is available with a painted body, installed

radio, battery, and charger (as are some other MRC kits). Traxxas also offers prebuilt, pre-painted kits, and DuraTrax's "Maximum" series of nitro vehicles are ready-to-go

right out of the box. RTRs are certainly convenient, but you do pay a premium for the factory assembly, and you miss out on the invaluable experience and know-how you gain by building the kit yourself.

Should you buy an RTR? If you like assembling models, and mechanical things in general, you'll love building an RC car. See if you match this "snapshot" of the ideal RTR customer:

- You are not confident of your building skills, or...
- Building an RC car doesn't interest you.
- You lack the space or time to build a kit (space shouldn't be a problem; a kitchen table is fine. Expect to spend three or four evenings completing your first kit).
- You have the time and the space, but you want to start driving NOW!



GOING NITRO

Just about every vehicle type listed here can be had as an electric model or nitro-powered, and nitro trucks and touring cars represent the largest share of the "gas" market. Many gas models aimed squarely at the first-time RC hobbyist include partial assembly, electric starters and even pre-painted bodies, in some cases. While these kits are easily the simplest nitro vehicles to operate, we still feel rank beginners should start with an electric car. The convenience and simplicity of battery power make it easier to master the basic elements of RC, not the least of which is driving. Electric motors are also more forgiving than nitro engines. Even the most abused motor will generally still run, whereas nitro engines can only tolerate a small deviance from the optimum carburetor settings and correct piston/sleeve fit. If you just have to make that first car a gas car, be sure your local shop is nitro savvy, or enlist the help of someone with nitro-power experience. Here are some kits to consider:

NITRO TRUCKS

Traxxas Nitro Stampede, Rustler and Sport; DuraTrax Maximum ST; Kyosho Nitro Sandmaster and Tracker; MRC Thunder King (all are available as kits, assembled kits, or "ready-to-run" with installed radios—check out the October issue for a shootout of these trucks!).

NITRO TOURING CARS

HPI Nitro RS4 RTR; Traxxas Nitro 4-Tec (available as a kit or RTR); Tamiya TG10; Kyosho GP Spider Mark II; OFNA Nitro Z10 Sprint, Schumacher Nitro SST.

1/8-SCALE BUGGIES

Although this category is emphatically "not for beginners," some kits are much easier to complete and operate than others; the Kyosho Inferno DX and MP-6 Sport, Thunder Tiger Mirage and OFNA's prebuilt buggies are the best picks. The soon-to-be-released DuraTrax Axis—the hobby's first RTR 1/8 buggy—will probably also be a list-topper and could revoke the segment's "no beginners allowed" status; look for a review soon.



GETTING STARTED GUIDE

● ABOUT CHARGERS

Battery chargers are separated into two broad categories: mechanical "timed" chargers and peak-detecting chargers.

• **Mechanical chargers** use a clockwork timer that is set to charge for 15 minutes—sometimes 20. When the time is up, the charger switches off or goes into a trickle-charge mode that charges the battery very slowly. Very few packs actually reach a full charge in 15 minutes, so another crank of the timer knob is usually required to complete the charge process; the battery pack must be monitored closely to assure a complete charge (when the pack is warm to the touch, it's fully charged). Mechanical chargers aren't very convenient, but they are inexpensive and reliable.

• **Peak-detecting chargers** actually sense when the battery is fully charged then shut off. This is convenient and ensures that you get the most from your battery. This type of technology used to be expensive, but the latest simplified peak chargers on the market are downright cheap, and I mean that in a good way. MRC's Super Brain and Hobbico's Piranha are two good examples, and they're only a few bucks more than a timed charger. Go for a peak charger right from the start; you'll be glad you did.



● TOOL TIME

All kits include a few essential tools that are not part of the typical household tool kit, and with the help of some common kitchen-drawer tools, such as a pair of pliers and a screwdriver, they will get your first kit built just fine. But to get the most from the hobby, it's best to pick up some high-quality implements; as funds allow, add better tools to your toolbox. Stock your box with the following, and there will be few tasks you can't handle.

- No. 1 and no. 2 Phillips screwdrivers
- Medium-blade screwdriver
- Kit-supplied box wrench
- High-quality Allen wrenches (sized to replace the kit-supplied "L" wrenches)
- Slip-joint pliers
- Needle-nose pliers
- Curved body-trimming scissors
- X-Acto knife
- Diagonal cutters
- Soldering iron
- Rotary tool

● RADIO DAZE

If you're like most RC guys, you're more interested in picking a car than choosing a radio. However, you should take the time to select your radio set carefully; after all, your entire RC experience will (quite literally) be transmitted through the radio you choose. Compare features and prices, and be sure to give the best candidates a test squeeze before you buy.

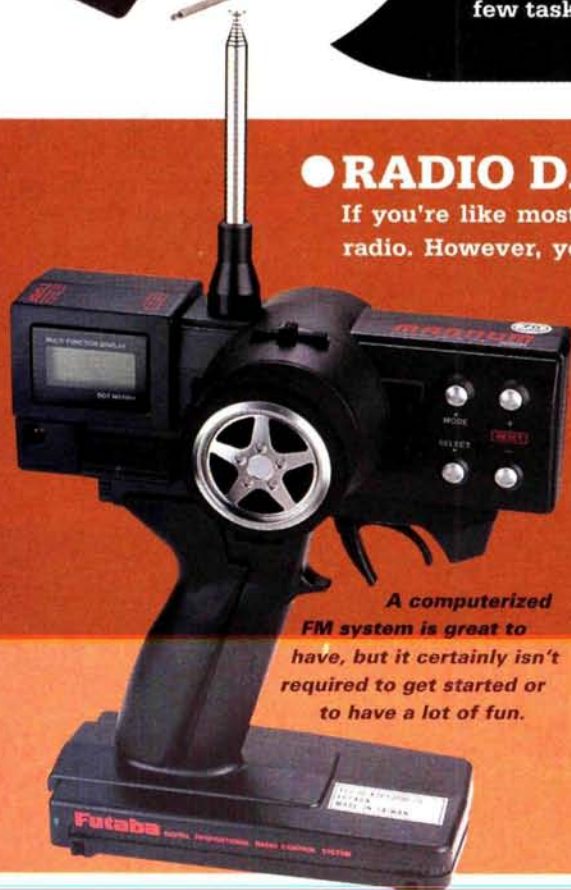
BASIC SYSTEMS

Racers and experienced enthusiasts swear by their big-dollar FM radios, but you really don't need an expensive system to have fun or even to race. At the low-end of the price spectrum, all radios are about the same in price and features, and they all include a receiver, a holder for receiver batteries and two "standard" servos that can handle steering or throttle chores in just about any 1/10-scale vehicle. The deciding factor in choosing a basic AM system should be feel and cost—place the emphasis on "feel," unless you count every penny. Here's what you can get for less than \$80:

- Airtronics Rival Sport
- Futaba Magnum Sport
- Hitec Lynx
- JR Racing Python
- Traxxas Top Qualifier

The Hitec Lynx and JR Python offer a useful feature the others omit: dual-rate steering. Read on.

A computerized FM system is great to have, but it certainly isn't required to get started or to have a lot of fun.



● UNDERSTANDING BATTERIES

Most entry-level RC cars accept the common, 6-cell stick-type battery. If you've priced battery packs, you've no doubt noticed that some packs are much more expensive than others. The difference in price reflects greater capacity, and really pricey packs use a matching system to group cells for best performance. I know you're wondering what all that means, so here's the scoop:



CAPACITY

Just about all sport packs have a big number on them: 1400, 1500, 1700, 2000, or 3000. That number refers to the cells' capacity in milliamp hours (mAh)—a measure of the amperage the pack delivers for one hour under a constant load. For example, a 2000mAh pack can handle 2000 milliamps (or 2 amps) for one hour. Simply put, the greater the capacity of the pack, the longer your car will run.

MATCHED BATTERIES

"Matching" is a process that tests individual cells for capacity, voltage and internal resistance. The cells with matching numbers are grouped together—hence the term "matched pack." The benefits of matched packs include longer run times, increased voltage and more consistent power delivery as compared to an "unmatched" pack of the same type of cells. Does it matter? Not for playing around and most off-road stock racing, but for other types of organized racing, matched packs are a must.

A STEP UP

If you can float a little more dinero into your radio budget, consider getting the next model up from the basic radio sets, so you can get two very useful features: *dual-rate steering*, which allows you to adjust the amount of steering travel, and *throttle-endpoint adjustments*, which allow the amount of forward throttle and brake travel to be set independently—important for nitro cars. The Airtronics Rival RV2P and Futaba Magnum Junior add both features to the "base" Rival and Magnum radios, and JR Racing's XR2 has dual rate and throttle end points plus an LCD screen and additional features, such as model memory.

WHAT ABOUT FM?

As a beginner, you don't need to worry about getting an FM radio, but if you have the cash to jump in with an FM set, go for it; the rewards are better glitch resistance and usually more features. I say "usually" because there is a new breed of budget FM radio that is basically the same as the AM counterpart except for the signal modulation—frequency modulation (FM) instead of amplitude modulation (AM). The Hitec Lynx FM and new Futaba Magnum Junior FM are good examples of low-dough FM radios.

● ALL ABOUT SPEED CONTROLS

All electric RC cars require some type of a throttle, or speed control, to allow the car to operate at variable speeds. Speed controls can be divided into two basic types: mechanical and electronic.

- **Mechanical speed controls** use a servo to move an arm over a set of electrical contacts to select one of three forward speeds, or reverse. This type of speed control, usually called a "3 step" control, does not allow the driver to make subtle throttle adjustments, but this is rarely a liability. Another type of mechanical speed control uses a wire coil resistor and wiper arm (much like a slot-car controller) to allow smoother throttle control, but today's kits rarely feature these (Team Associated and Team Losi "sport" kits are the notable exceptions). All mechanical speed controls vary motor speed by placing resistors in the motor-battery circuit. To limit speed, the resistor burns off some of the battery's energy as heat. As you might guess, it isn't terribly efficient to limit motor speed by wasting unneeded battery power as heat, and additional energy must be diverted to power the servo that operates the mechanical control. In addition, mechanical speed controls tend to require frequent maintenance—all compelling reasons to equip your car with an electronic speed control—better known as the ESC.

- **Electronic speed controls** are self-contained, solid-state throttle units that vary speed by switching the motor on and off at a super-high rate, or frequency. If you were to flip a switch on and off once per second, the switching frequency would be 1 hertz (1Hz). Many inexpensive ESCs switch at 1000Hz or higher; that makes for super-smooth throttle control and much greater efficiency. ESCs are available with reverse, as

well as forward-only models typically aimed at racers (reverse is not allowed in sanctioned races). These days, even the most inexpensive ESCs are durable and reliable, so don't worry if your budget requires you to get the cheapest unit in the shop.



● WHICH MOTOR?

Motors may all look alike, but they're quite different inside. Here are some things to keep in mind.

• **STOCK VERSUS MODIFIED.** Stock motors take their name from stock-class racing, the class for which they were developed. In stock class, everyone must use a stock motor to keep things fair. All stock motors use bushings to support the armature (the part of the motor that actually spins; the end of the armature is the shaft that sticks out of the motor) and have nonadjustable endbells (the part of the motor the wires connect to). Although generally less expensive than their hand-wound, modified cousins, stock motors are neither as adjustable as mods, nor as fast, but they aren't "slow" either.

Rebuildable stock motors, introduced by Trinity through its Paradox line, offer many of the same maintenance benefits previously only available to mod motors; they can be completely disassembled and rebuilt. Despite this level of accessibility, most have been extensively tamper-proofed to maintain parity in stock-motor performance. If you race stock class, these are the motors to have.



For play, machine-wound modifieds are often best; they are inexpensive, durable and rebuildable and, depending on which "wind" you purchase, they can also be blazing fast. Modified motors use ball bearings to support the armature and may feature an adjustable endbell. By twisting the endbell, the motor's brushes (which transfer battery energy to the armature) are repositioned in relation to its magnets. This relationship is the motor's timing, and changing the timing can alter rpm and torque.

HOW MANY WINDS?

Modified motors are described by the number of winds and turns. Winds are the number of wire strands that are wrapped around the armature, and turns are the number of times the wire (or wires) is wrapped around the armature. Hence, a 14 double (or 14x2) has two strands of wire wrapped around the armature 14 times, and a 19 quint (or 19x5) has five strands of wire wrapped around the armature 19 times. Wire thickness also changes with different winds; generally, the fewer the strands, the thicker the wire.

What does it all mean? Generally, fewer turns make for more power, but at the expense of efficiency (your batteries won't last as long). Fewer strands give more torque or low-rpm power, while more strands give greater power at higher rpm. For the best balance of speed, power and run time with off-road vehicles and touring cars, try a modified in the 16- to 19-turn range. Trinity's Speed Gems, the Team Orion Pilot line and the Reedy Qualifier series all offer suitable winds.

• **HAND-WOUND OR MACHINE-WOUND?** There are two ways those winds and turns of wire get wrapped around the armature; a machine or a human does it—by hand. Machine-wound motors are more cost effective: the winding robots don't take home a salary, or break for lunch, and can wind whole bunches of armatures in minutes. People, on the other hand, require such niceties as paychecks, and they take much longer to wind an arm. The finished product, however, is the best it can be. Each wind is as tight and as neat as possible and uses the least amount of wire; extra care is taken when soldering the wire to the armature and when balancing the final product. Hand-wound mods are faster and more efficient than machine-wound mods of the same specifications, but they are more expensive.

Racers opt for hand-wound motors whenever they can, but don't think yours must be hand-wound to race; the less expensive machine-wound motors are competitive for all but the most intense contests, and you can probably buy two for the price of one good hand-wound one. For play, machine-wound motors are definitely the way to go: they're cheap, rebuildable and powerful. And that's more fun!

The addresses of the companies mentioned are listed alphabetically in the Index of Manufacturers on page 241.

● "GOTTA GET CHECKLIST"

These lists may seem to contain a lot of stuff, but many items are packaged together; for example, most kits suitable for beginners include a motor and mechanical speed control, and all "sport" radios include a pair of servos and may also be available with a servo and ESC. Your local hobby dealer can help you determine exactly which items you must buy separately, but one way or another, you will need all the items listed here.

ELECTRIC CAR

Battery
Charger
Motor
Transmitter and receiver
8 AA batteries
Steering servo

Electronic speed control (ESC) or throttle servo
Polycarbonate-compatible paint
Cyanoacrylate glue (CA)

NITRO CAR

Receiver battery (Ni-Cd pack or 4 AAs to fit battery holder)
Charger, if using Ni-Cd receiver pack
Engine
Air filter
Manifold
Pipe
Transmitter and receiver
8 AA batteries
Steering servo

Throttle servo
Fuel
Fuel bottle
Starter box (if using non-pull-start engine)
Glow starter
Polycarbonate-compatible paint
Cyanoacrylate glue (CA)
Thread-locking compound

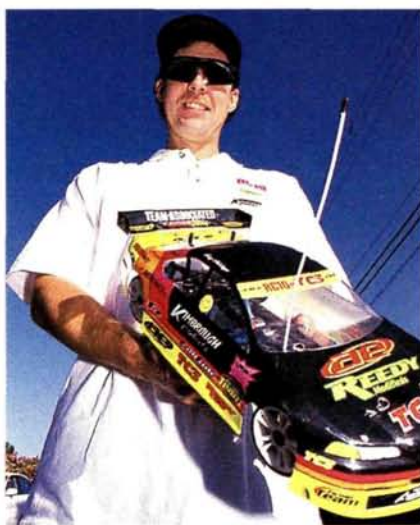


If you're new to nitro, a package deal like this DuraTrax nitro starter kit can save you some dough.

A Flash from the Past

World champion driver and RC celebrity Tony Neisinger came out of retirement to attend the '99 ROAR On-Road Nats, which were held at Ripon R/C Speedway in Ripon, CA. A prominent 1/2- and 1/10-scale on-road driver, Neisinger surprised everyone by signing up instead for the extremely popular (and competitive) Touring Modified class. He was one of the few racers who competed with a production version of Team Associated's new TC3 touring car.

Neisinger put in a smoking 17/4:10.76 in the first round of qualifying, and that was good enough to lock him into fourth in the A-main. Unfortunately, he ran into problems during the triple A-mains and was unable to finish very well in any of the heats. Although he finished in ninth place overall, Neisinger deserves a lot of credit because he was competing in an unfamiliar class, and he was also driving a brand-new car that was marked for termination by its competition.



MARK PAVIDIS JOINS PRO-LINE R&D TEAM

Longtime Associated guy Mark Pavidis has moved over to Pro-Line, where he will partner Tim Clark and Jason Ruona to develop Pro-Line parts and accessories. If you want to be the first to spot prototype Pro-Line treads, Mark's cars will be a good place to start! Mark will still run the full lineup of Associated vehicles, including the TC3, and he will continue to compete in 4WD with his Yokomo. "I'd like to thank Associated for a lot of great years," says Mark. We're sure he's keeping busy at Pro-Line, and he's bound to be busy at home as well: Mark's baby daughter arrived on September 1. Allison Mary Pavidis, we hope you like RC cars! Mark, congratulations on the new Pro-Line gig and your new baby girl.



California R/C Center Opens Indoor 1/10- and 1/8-scale Off-Road Track

California R/C Center in Anaheim, CA, has developed a successful parking-lot racing program that attracts an average of 80 racers on race days and many more than that on practice days. The on-road track is now permanently set up; that means that it's open during store hours and available for practice every Saturday and Sunday, except on the twice-monthly race days.

Cal R/C plans to build a permanent, off-road track inside its giant warehouse, and best of all, it's being designed for nitro-powered, 1/10-scale-truck and 1/8-scale-buggy racing. According to Cal R/C, it will be a national championship-caliber racetrack with a special ventilation system that will make indoor gas racing possible. Of course, the track will also accommodate electric-powered off-road vehicles, and the Cal R/C folks expect that the electric classes will be well attended. The track should be completed by the end of '99 and ready to host large racing events in the year 2000.

RACER TIP OF THE MONTH

■ Daryl Silva of Team Associated



Pro-Line's sticky, S3, touring-car slick tires offer tremendous traction, but they need to be run a few laps before they're completely broken in. If you ever need to break in a new set of S3 slicks and you don't have a free track to plop your car down on and do a few donuts—or your transmitter is in the radio impound—try this tip. Before you race in that important heat, lightly grind the surface of the tires with a Dremel tool equipped with a rotary sanding drum. You only need to "scuff" the tires slightly; don't get carried away. This will ensure that your tires provide optimum traction where it's needed the most: in the first corner.



RACER news

INNOVATOR AT WORK

Jurgen Lautenbach

LRP's digital electronic speed controls have been available in the States for only a few years, but they have already helped many of the world's top drivers win numerous national and world championship titles. LRP also manufactures a full line of sport-level forward and brake and forward and reverse speed controls that are distributed by Associated Electronics, which brings LRP's high-quality products to the general public. While attending the IFMAR Off-Road Worlds in Finland, I had an opportunity to chat with LRP's founder, Jurgen Lautenbach, about the company's origins and his plans for its future. I hope you'll find his responses as entertaining as I did.

Radio Control Car Action: How did you first discover RC, and what were you into before that?

Jurgen Lautenbach: I was actually interested in photography at first, but when I was 14, I saw an RC car race at a track and became hooked right away. Since I was 10 years old, I loved all forms of competition—especially auto racing. I would wake up early on Sunday morning to watch Formula 1 racing on TV. My parents knew that whenever there was a race on TV, I could be left alone for hours as long as I had a stopwatch in my hand. I needed nothing else.

RCCA: So I guess you could say that racing is in your blood?

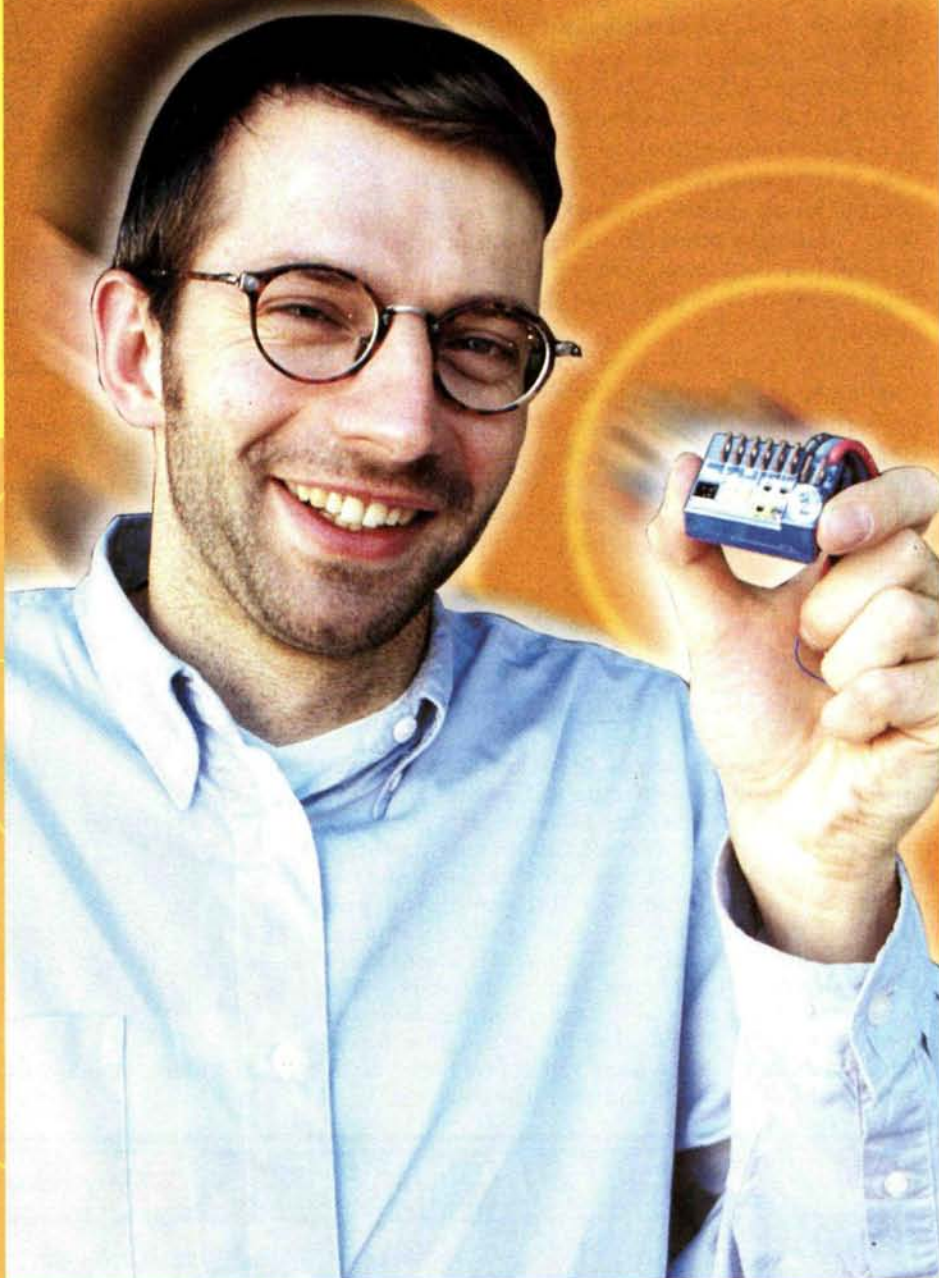
JL: Absolutely!

RCCA: When did you get your first car and start competing?

JL: When I was 14 or 15, I worked as a paperboy and saved up enough money to buy a car. By the time I was 16, I had become sponsored by a German RC distributor: Karl Heinz Schaefer. He actually became kind of a second father to me.

RCCA: Did you want a career in the RC industry, or did you have other plans?

JL: No, my dream during those days was to go to work for Ferrari building F1 cars, even though my mother wanted me to go work for Mercedes, where my father worked. I ended up finishing the highest level of school in Germany and then went to university, where I studied mechanical engineering. My RC racing had become more and more serious, and at one point, I was forced to make a



decision: to continue racing or continue with school. I made a very tough decision to leave school, which was an absolute nightmare for my parents; it went against basic German principles. I started tuning electric motors in my mother's laundry room.

I sold motors to many racers and made some money, but initially, I wasn't into it for the money; all I wanted to do was make enough cash to be able to travel around the world racing RC cars. Because of my competitive nature, I just had to know how my skills





Jurgen reads an arsenal of LRP decals. He has been known to plaster them everywhere!

measured up against the best drivers from around the world. In 1989, in Australia, I was an A-main finalist at the Off-Road World Championships. I was driving a Schumacher car and using my own motors. Then in 1990, I won three of the four European championships, which is an accomplishment that no one has matched, even to this day. That made a lot of people curious, and it really opened up the door to my business.

RCCA: What made you decide to enter the electronic speed control market?

JL: We were doing pretty well with our motor line, but we felt that in order to grow, we needed to be associated with a speed control and RC car manufacturer—kind of like the Team Associated/Reedy/Novak synergy back in the early '90s. Basically, we were looking for an equal partnership in Europe to really push things to the limit and win a world championship. But we could not find a speed-control manufacturer that was really determined, so basically, a good friend and I bought some equipment and started to design a speed control. Fortunately, we both had knowledge of electronics, and by 1990, we had a few hand-built prototypes. In 1991, we introduced our first commercially available speed control: the LRP LE25 AMS.

RCCA: What has been LRP's biggest milestone?

JL: The 1995 Off-Road World Championships at Yatabe Arena in Japan changed my life—and the life of the company. With a brand-new product—the ICS Digital ESC—we managed to TQ and win both the two-wheel-drive and four-wheel-drive championships. And while we're on this subject, there are a few people I would like to thank for their unconditional support: Gene Husting, Cliff Lett and Mark Pavidis. The help they provided, not just at that particular race, but also during the prototype stages,

was instrumental in the development of the final product. The information Cliff and Mark provided LRP through track testing was absolutely unbelievable and far more elaborate than the independent testing we were able to establish. Basically, we designed the product, but the feedback provided by Team Associated allowed us to give racers the performance and features they demand.

RCCA: How has LRP grown since then?

JL: In 1995, we had a development staff of three people. We now have five people doing the design and development; I'm one of the five. Most people usually see me at the races, but behind the scenes, there are a lot of people who are busy making things better and more professional in an effort to give our customers the best possible products and service.

Another side of LRP that not too many Americans know about is that we are also an RC distribution company. We are the exclusive distributors for HPI in Germany and Austria, and we are also the exclusive distributors for KO Propo, Hot Bodies and TRC Tires. We have a staff of ten salespeople who travel to tracks and hobby stores selling the products.

RCCA: What do you enjoy the most about working in the RC business?

JL: It makes me very happy when not only the top drivers but also average racers use our products and tell me that they could feel a difference, or they could go faster, or they feel more connected to the car.

RCCA: Pro-level ESCs are extremely sophisticated these days, and it's hard to envision any great leaps in technology any time soon; what do you think will be the next big breakthrough in ESC technology? Will the ESCs of the future be able to store data that can then be uploaded into a PC to give information on amp draw, battery voltage, etc.?

JL: I think that ESC technology is a lot like Formula 1 technology; you can push things further and further to get more data, but I don't think the problem is the amount of data; what's important is what you learn from that data. It isn't very difficult to monitor an electric motor around a track and then provide information on the throttle position at different parts of the track and the motor's response to it. The question is, what good is that data if track conditions change from one heat to the next? This is just one example; the point is, there are too many variables to consider to make this kind of information useful. I think that LRP speed controls will always offer pre-selected, pretested options. The level of test-

ing that goes into our speed controls is far beyond the level of testing that any individual could do. This way, the racer is not left alone to figure out how to make the speed controller work best.

RCCA: LRP's new V6 SR is specifically designed for stock racing, and the new V7.1 is designed for modified racing. What's the advantage of having dedicated ESCs for each racing class? Is the concept catching on?

JL: We are very proud of how linear and smooth the V6 is. In my opinion, this is why the V6 is so successful in the U.S., where two-wheel-drive off-road is very popular. These vehicles require a strong motor to be able to clear the jumps, yet they must remain smooth around the corners; that's where the V6 shines. Our new V7.1 is even smoother, as



Here's Jurgen at the '99 IFMAR Off-Road Worlds, tweaking some LRP gear. That pit area is way too neat!

most of our team drivers have discovered. But at the same time, we found that if you use a less powerful, 27-turn stock motor on an extremely smooth speed control, the car will feel less responsive and maximum power will not be delivered. The SR is designed to give the customer the highest power output possible, and stock racers are already embracing it.

RCCA: Thanks, Jurgen; it was good talking to you. I'll see you at the next big race.



MIP

Race With US

RACER news

Speed Shop

New Failsafe FM Receiver from FMA Direct

FMA Direct's* Warlock 4-channel FM receiver features a built-in, programmable fail-safe system that's designed to protect your valuable RC investment in the event of a signal loss or when interference is caused by an unknown source. Basically, in the event of a signal loss, the Warlock receiver will return servos (or an electric vehicle's ESC) to their neutral positions or to a safe position programmed by the user, and this will prevent the vehicle from running out of control.

The Warlock's fail-safe feature can be independently activated or deactivated on any of the four channels. In other words, the feature may be turned off on the channel that controls the steering servo but remain active on the channel that operates the throttle/brake servo on a nitro-powered car or the ESC on an electric vehicle. The servo's default position (the position to which the servo returns in the event of a signal loss) is also user-programmable.

The FMA Direct Warlock FM receiver is designed to work with Futaba, JR and Hitec FM radio systems and servos as well as all Airtronics FM transmitters and servos that are equipped with the company's new "Z" connectors. If you're looking for some extra insurance for your favorite RC rig, check out the Warlock; it might just cast a spell on all those glitch gremlins that hang out at the track.

Part no.—401FM75-4; \$49.95.



Acer Racing Ceramic Nitride Pro Series Diff Rox

Acer Racing* boasts that its tungsten-carbide diff balls are the hardest, smoothest and longest-lasting diff balls available, and the company provides compelling test results and statistical data with all the products they send us for evaluation. The real proof, however, is only apparent when the products are tested in "real-world" racing conditions, and in my opinion, Acer Racing's carbide Diff Rox live up to the company's claims.

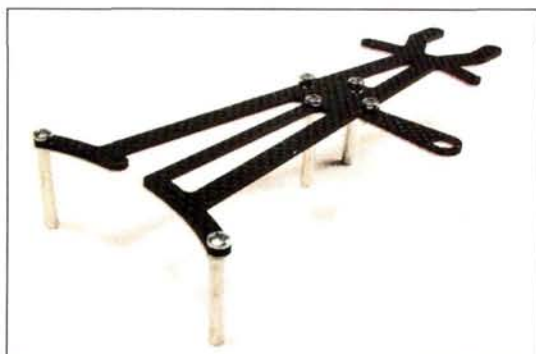
According to Acer Racing, the ceramic nitride Pro Series diff balls it now offers are the first and only to outperform tungsten carbide. The ceramic balls are stronger, harder and more abrasion- and wear-resistant. They are also 79 percent lighter than the carbide balls, and this lowers rotational mass and improves speed and acceleration. The Diff Rox are available in 3/32- and 1/8-inch as well as 2.4 and 4mm sizes.

Price—\$19.99 (package of 12).



Penguin R/C Hop-ups for the HPI RS4 Pro 2

Penguin R/C's* A-Deck graphite upper deck for the HPI RS4 Pro 2 is designed to make the car stiffer; according to Penguin R/C, this improves the car's handling at the limits and makes the vehicle more predictable. The upper deck comes with all the hardware that's necessary for installation and includes two adjustable aluminum posts that allow you to slightly adjust the chassis's side flex. The company also offers optional chassis stiffener posts that allow you to adjust the vehicle's torsional rigidity to your liking.



Penguin R/C offers a couple of other cool goodies for your RS4 Pro 2. The graphite transponder mount replaces the stock molded unit and looks great with the rest of the car's graphite components. Penguin R/C's Pro Strap battery mounting system uses hook-and-loop tape and heavy-duty buckles to hold the batteries more securely on the chassis, and it's just as easy to use as the stock battery straps. The Pro Strap system comes with graphite mounting plates and all the hardware that's needed for installation. For more information, give your hobby shop or Penguin R/C a call.

A-Deck Stiff Upper Deck—part no. P3701, \$26.99; chassis stiffener posts—P3703, \$6.99; graphite transponder mount—P3702, \$3.99; Pro Strap system—P3700, \$15.99.



RACER news

FROM THE
WINNERS'
CIRCLE

The IFMAR Off-Road Worlds

WINNING CARS

Team Orion/Team Losi driver Jukka Steenari and Team Yokomo/Team Associated/Reedy driver Masami Hirosaka were kind enough to send us their world championship-winning cars so we can show you the products and setups they used to win against the world's best drivers. Although both cars featured here are equipped with many of the available factory hop-ups, you can't help noticing that they resemble the cars we drive at local club races. It's always fun to compare various car setups—especially when the information comes directly from a world champion—so let's compare notes.

HIROSAKA'S 2WD TEAM ASSOCIATED B3

Masami Hirosaka's car looks quite stock, but after careful inspection, you'll find that many factory options are installed on his car. Most notable are all the Factory Team graphite chassis and suspension components and the blue titanium tie rods. Hirosaka is also an incredibly sensitive driver who can feel even the slightest glitch; that's probably why he has installed three power capacitors around the various electrical components.



- GM V12 Worlds Edition ESC
- Reedy Sonic II 9-turn double-modified motor
- Yokomo Plus-2 RC-2000 cells
- KO Propo PS-2001 FET servo
- Pro-Line Radius Rib front and Holedshot rear tires with stock Pro-Line foam inserts
- Pro-Line wide front and rear wheels
- Pro-Line Deja Vu Tu body
- Factory Team blue aluminum screws
- Factory Team Unobtanium shock shafts
- MIP lightweight aluminum CVDs
- Team Associated clear chassis protective film
- Team Associated prototype graphite rear shock tower

REAR SUSPENSION

- Ride height: arms slightly below level
- Camber: 0
- Anti-squat: 3 degrees
- Toe-in: 3 degrees
- Swaybar: no
- Camber-link mounting position: inside hole on hub carrier and outside hole on bulkhead
- Hub carrier: centered

SHOCKS

- Shock fluid: 35WT
- Pistons: no. 1
- Springs: blue
- Limiters: none
- Upper shock-mounting position: outside hole on shock tower
- Lower shock-mounting position: inside hole on suspension arms



SHOCKS

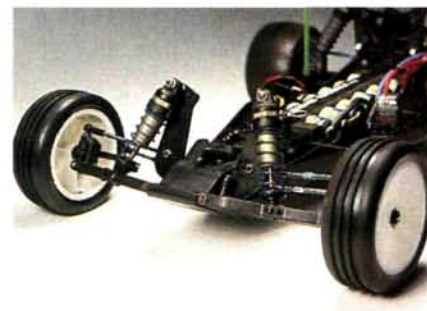
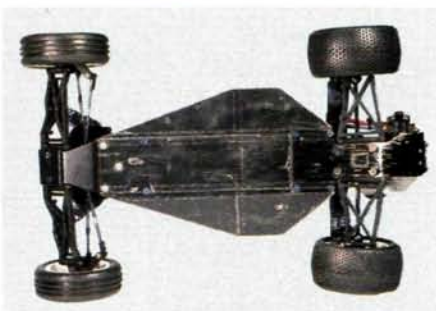
- Shock fluid: 30WT
- Pistons: no. 1
- Springs: blue
- Limiters (inside/outside): 0/5mm
- Upper shock-mounting position: middle hole on shock tower
- Lower shock-mounting position: outside hole on suspension arms

MISCELLANEOUS

- Battery-mounting location: middle position
- Pinion/spur gear: 16/81

CHASSIS AND SUSPENSION SETUP FRONT SUSPENSION

- Ride height: arms level
- Camber: 2 degrees negative
- Caster: 25-degree blocks used
- Toe-in/out: 0
- Swaybar: no
- Camber-link location: outside hole on shock tower
- Steering bellcrank: stock position





STEENARI'S 4WD TEAM LOSI DOUBLE-X4

Jukka Steenari took advantage of his status as a factory team driver and decked out his car with many of the available factory hop-ups. You'll find that he chose all of Team Losi's lighter and stiffer graphite chassis and suspension components as well as all of the company's super-efficient drive-line components.

SHOCKS

- Shock fluid: 25WT Team Losi
- Pistons: 57
- Springs: orange
- Limiters: none
- Upper shock-mounting: hole no. 2
- Lower shock-mounting: inside hole on suspension arms
- Number of washers under steering-knuckle ball joint: 0
- Number of washers under caster-block ball joint: 2 gold
- Steering bellcrank: inner hole; stock rod length

SHOCKS

- Shock fluid: 35WT Team Losi
- Pistons: 54 (one-hole, 1.7mm)
- Springs: yellow
- Limiters (inside/outside): one "A" spacer/two "B" spacers
- Upper shock-mounting: hole no. 4
- Lower shock-mounting: outside hole on suspension arm

MISCELLANEOUS

- Battery placement: mounted forward on the left side and rearward on the right side
- Clicker adjustment: one-way freewheel
- Pinion/spur gear: 17/86

- Novak Cyclone ESC and XXL 27MHz FM receiver
- Team Orion Chrome Modified 9-turn double motor
- Team Orion V-Max RDS RC-2000 cells
- Airtronics/Sanwa M8 transmitter; Super ERG-ZR servo
- Team Losi Taper Pin tires (Yellow compound) with Losi wide rear wheels and Pro-Line wide front wheels
- Pro-Line soft foam inserts (front) and Trinity firm 2-stage inserts (rear)
- Team Losi Hot Weather body
- Lunsford Titanium tie rods
- Titanium cap-head screws
- Plastic outdrives front and rear with Trinity aluminum outdrive sleeves
- Alloy rear drive shafts; stock front universal drive shafts
- Threaded shock bodies
- 1.6mm rear swaybar with custom mount
- Lowered chassis plate with Trinity low-CG motor plate
- Losi titanium-nitride shock shafts

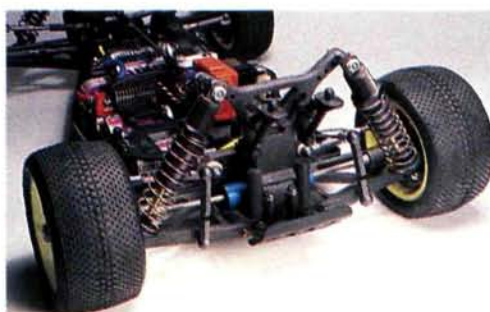


CHASSIS AND SUSPENSION SETUP FRONT SUSPENSION

- Ride height: bones below level
- Camber: 2 degrees negative
- Caster: stock
- Toe-in/out: 1 degree out
- Swaybar: no

REAR SUSPENSION

- Ride height: bones level
- Camber: 2 degrees negative
- Anti-squat: 2 degrees
- Toe-in: 3 degrees
- Swaybar: yes; 1.6mm
- Link mounting: hole no. 5.5 on bulkhead and outside hole on hub carrier
- Rear hub carrier: centered
- Camber link: no. 1 hole on bulkhead





RACER news

RACER PROFILE

Teemu Leino

While attending the Worlds in Finland, I also had the opportunity to chat with Team Orion/Team Schumacher factory driver Teemu Leino. Our conversation took place after he had finished in fourth overall in the 4WD class, and he was the eighth-place qualifier in the 2WD A-main. For the record, Teemu was an A-main finalist at the previous Off-Road Worlds, the event at which he was first exposed to the limelight. Here's Teemu.

VITAL SIGNS

Age: 22

Occupation: student

Hometown: Helsinki, Finland

First RC car: Murai Nina

Favorite racing class: 2WD and 4WD off-road

Favorite track: Lake Park in Tampa, FL

Favorite race: Florida Winterchamps

Years racing: 7

Sponsors: Team Orion, Schumacher, LRP, Pro-Line and Sanwa



Radio Control Car Action: Thanks for your time, Teemu. It's always a pleasure to add a little international flavor to the column. Tell me, how did you get started in the hobby?

Teemu Leino: My friend's brother was into RC cars, and when I first saw his cars, I was totally interested in them. I soon bought a car and started running it on the street and at the park; then I became interested in racing.

RCCA: What do you think is the most important factor in getting your car dialed in and becoming a more consistent driver?

TL: Practice will always make you a more consistent driver. You also need a very good car, and you must be very familiar with how to tune it, or you will never get it dialed.

RCCA: Now that the two-wheel-drive qualifiers are over and you're comfortably sitting in the eighth qualifying position, do you think the competition in the two-wheel-drive class was tougher than in four-wheel-drive?

TL: I'm so happy that I made it into the A-main, and yes, of course, the competition in two-wheel-drive was much tougher than in the four-wheel-drive class. That's because the U.S. drivers are much better in two-wheel-drive than they are in four-wheel-drive, and the best drivers from the U.S. are all competing.

RCCA: Since you're both from Finland, do you and four-wheel-drive champ Jukka Steenari ever race against each other at club races? If so, will your relationship change because of his new title?

TL: Yeah, we sometimes practice together at the track, and after that, we go to a disco to meet some ladies. No, nothing has changed; it was great to see Jukka win the championship for our country!

RCCA: I noticed that you're driving Schumacher's new two-wheel-drive Worlds car; how do you like it?

TL: This is actually the first time I've driven the new car, and let me tell you, it runs right. The servo and batteries have been moved farther up, and the car has much more steering; that has helped a lot on this track.

RCCA: Are you pleased with your performance in the four-wheel-drive class? What was running through your mind when you totally dominated and won the third leg?

TL: I am very angry with my performance in the first two legs; I just made too many mistakes. In the third leg, I did better, but it really didn't count at that point because the best I could do was to finish fourth overall.

RCCA: What did you think of the facility, the track and the overall organization?

TL: The facility and organization were great, but the track was just OK. In my opinion, the track was a little bit too huge.

RCCA: How often do you race in your home country?

TL: During the winter, I race about three or four times a week at the Helsinki Mini Racing Club. We race indoors on a small carpet track that only takes nine seconds to get around. Sometimes, we place huge jumps all over the small carpet track to make it more challenging. During the summer, we set up tracks outdoors with dirt and clay surfaces the way they do in the U.S.

RCCA: Off-road cars raced on a carpet track? Do you compete in any other racing classes?

TL: I've been racing my Schumacher SST touring car in the Eurochamps, but I still prefer to race off-road.

RCCA: What do you like to do when you're not racing cars or studying for school?

TL: Party!

RCCA: Are you chasing any particular goals?

TL: Not really ... I guess I would like to win a world championship one day.

RCCA: Thanks for the chat, Teemu. I wish you well, and I hope you win that world championship soon.



RACER news

THE KYOSHO WORLD CUP

West Coast Regional

Hawaii Bound!

by Nep Melendres Jr.



Castle Hobby employees and RCCAR club members set up the parking-lot track.

ON THE WAY to the Kyosho West Coast Regional Championships, I noticed some ominously dark clouds forming on the horizon. The weather in the San Francisco Bay area had been warming up, and I thought summer was finally on its way. Unfortunately, a tropical storm again brought rain to Northern California. The rain finally let up around 10 a.m., and the cars were practicing on the track before noon. Eric Vasutin, the race director and Kyosho West Coast Regional winner of 1996, wanted to complete the racing before the next rainfall. His timing was impeccable; the qualifying, B-main and 60-minute A-main were all concluded before a drop of rain hit the track. It's a good thing, too, because now I have a story to tell you.

QUALIFYING

The drivers had three, 10-minute qualifying heats to put in their best times. Mandatory driver changes were enforced; the first occurred five to seven minutes into the race. The team of Dennis Racine and August MacBeth ended up with the TQ after they completed 37 laps. The team of Camron Wagner and Jeff Blackburn was close behind with 36 laps. During the second qualifying round, the Racine/MacBeth team lost a muffler. With a total of 35 laps and a car that was stuck in second gear, the team of Kevin Pitta and Maurice Hayes qualified in third. Three qualifying rounds were supposed to be run, but the third round was canceled because of the threat of rain. Ten teams competed in the B-main, with the winning team advancing to the A-main.

A-MAIN ACTION

The one-hour A-main began with a Le Mans-style start. The co-drivers held the running cars off the ground, and when the starter's flag touched the ground, the race was on. Wagner got the holeshot, then MacBeth pulled around him to take the lead on the second lap, followed by the third-place team of Chin and Ip. After 11 minutes, Wagner overtook MacBeth for the lead. Hayes had moved up to third but was still two laps down from the leaders.

The first mandatory driver change was at the 15-minute mark, but the drivers had until the 17-minute mark to make the change. At the 16-minute mark, MacBeth passed Wagner for the lead; they both came in for a fuel stop and allowed their co-drivers to step in. Blackburn took over for Wagner and briefly took back the

THE TRACK

The West Coast Cup Regional Championships were held just outside Silicon Valley in Campbell, CA. The track was set up in the parking lot of the shopping center in which the event's host, Castle Hobbies, is located. Radio Control Championship Auto Racers (RCCAR) is a local club that races there every month. The club members and Castle Hobbies' employees set up the track. Joel "Magic" Johnson has been known to race there quite frequently. The track consists of a long straightaway that leads to a right turn, then a left-hand sweeper, then into tighter technical corners; eventually, it eases back to the straightaway.



lead. There was some contact between Blackburn and Racine (who had taken over for MacBeth). With these two new drivers fighting for the lead, the racing was closer. By the 18-minute mark, Racine had the lead. The next mandatory driver change was at the 30-minute mark, and the lead alternated a few times between the Racine/MacBeth team and the Wagner/Blackburn team.

Shortly after the 30-minute mandatory driver change, MacBeth took over for Racine and was able to put a couple of laps down on second-place Wagner. At times, the first- and second-place cars were on the

same lap, but Wagner was not able to fully reel in MacBeth. At this point, the leaders had eight laps down on the third-place team of Lee/Rachman.

Forty minutes into the race, the wind picked up and clouds started moving in slowly. It seemed as if the racing gremlins just wouldn't leave the Pitta/Hayes team alone.

With 20 minutes left, one of their tires ripped open and lost an insert. The Pitta/Hayes team moved back up to fourth, despite having different-size tires on the front wheels. There was some incidental contact between MacBeth and Wagner; they both said their tires started to lose traction toward the end. The spectators thought Wagner's car got loose after MacBeth gave Wagner a "Jeff Gordon"-style bump.

MacBeth never let up. He ended up on his lid when he tried to pass lapped traffic, but that seemed to make him race even harder. Both lead drivers complained about the lapped traffic blocking them toward the end. Can you blame them? With a one-hour A-main and an all-expenses-paid trip to Hawaii up for grabs, anything could happen. After 60 minutes of bumper-to-bumper racing, the leaders were only a lap apart. Nine of 10 cars finished, but only one could go on to represent the West Coast at the World Cup in Hawaii. August MacBeth and Dennis Racine are island-bound!



The top two finishers drove World Cup Edition Mark II cars.

THE RULES

Sponsored drivers and previous Kyosho Cup regional winners are prohibited from competing. Only Kyosho vehicles and hop-ups (including bodies) are permitted. At this track, the body of choice was the Porsche 911 GTI-1, followed by the AMG Mercedes CLK and the McLaren F1. Driver changes are mandatory in the qualifying rounds and in the Mains. Only Red Alert* fuel is allowed, and engines' pull-start mechanisms must remain intact. The winner of this year's regional championship advances to the Cup Championship in Hawaii. For future Kyosho Cup Regional race locations, more in-depth rules and a list of legal hop-up parts, check out Kyosho's website at www.kyosho.com.



The top three finishers (left to right): first-place team (these guys are going to Hawaii!) Dennis Racine and August MacBeth; second-place team, Jeff Blackburn and Camron Wagner; third-place team of Lee and Rachman.



The winners are bound for the Hawaiian Islands!



RACERnews

LIFE IN THE PITS

The rain delay gave me a chance to get to know some of the local racers. They're a great group of guys who take racing seriously but also know how to have a good time. I picked up a couple of hot tips on how to prepare for a one-hour Main with two mandatory driver changes. Keeping the receiver battery pack peak-charged is important. Driver Jeff Blackburn disassembles the cells in his receiver pack (the cells are usually just spot-welded together) and solders them back together with high-quality battery braids. This actually gives the batteries more power and run time, and provides a solid connection that will survive heavy impacts.

Racine and MacBeth each had his own radio transmitter (both set on the same frequency) to make the driver change as easy as flicking a switch. This allowed the drivers to program their own custom features on their own transmitters. I also found this cool quick-charger for Ni-Cd glow-plug igniters by OFNA* that works in 15 minutes. It's compact, easy to use and is powered by any 12V power source.

Hanging out with these racers from Silicon Valley was a great experience. After the track had been packed up, they invited my wife and me to join them for pizza and beer. They showed me that winning is great, but the most important thing is to have a good time with your friends whenever you race. That's what our sport is all about!

*Addresses are listed alphabetically in the Index of Manufacturers on page 241.

A-MAIN			
POSITION	LAPS	TIME	TEAM
1	212	60:04	MacBeth/Racine
2	210	60:00	Wagner/Blackburn
3	195	60:15	Lee/Rachman
4	193	60:09	Hayes/Pitta
5	188	60:14	Yu/Tse
6	187	60:12	Hui/Liu
7	183	60:07	Ip/Chin
8	183	60:10	Adams/Cardinali
9	169	60:07	Meininger/Arcangel
10	84	48:55	Colin/Hopkins

B-MAIN			
POSITION	LAPS	TIME	TEAM
1	61	20:14	Meininger/Arcangel
2	57	20:00	Lau/Liu
3	56	20:15	Sievert/Dean
4	52	20:13	Berliner/Awender
5	50	20:10	Stankovic/Stankovic
6	48	18:34	Khojasteh/Bonilla
7	43	18:57	Almoradie/Bryson
8	30	11:40	Rose/Barlaan
9	11	4:08	Myers/Montojo
10	DNS		Verano/Montojo

art. 990702 Race Prodigy 1/10
art. 990701 Race Prodigy 1/10

art. 990703 Classic Prodigy
art. 990704 Classic Vector 1/10
art. 990702 Classic Impact M2 1/10

art. 990703 Classic Prodigy
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PLEASE REQUIRE THE CATALOGUE OF THE ACCESSORIES AND SPECIAL PARTS TO THE L. COLLARI-INNOTECH COMPANY!!!

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ROBINSON RACING PRODUCTS

TROUBLESHOOTING

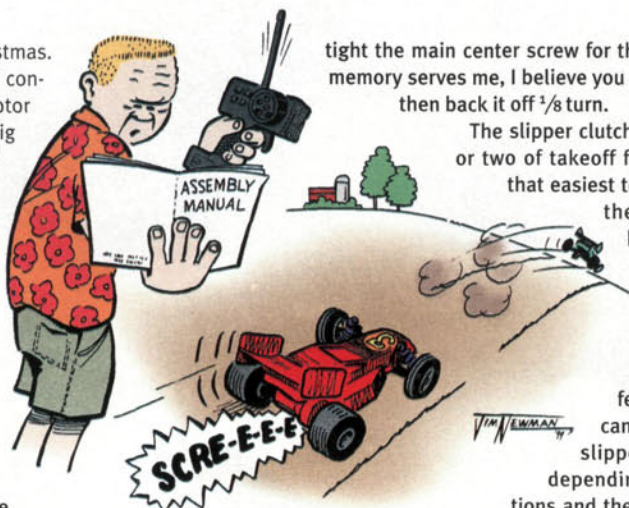
BY DOUG MERTES • ILLUSTRATIONS BY JIM NEWMAN

Listen Up

My Dad bought me an Associated B2 for Christmas. Since then, I've upgraded it with a Tekin speed control, a Magnetic Mayhem 22-turn modified motor and Trinity Voltmax batteries, but I have two big problems. First, I'm not really sure how tight the slipper clutch should be or how to tell when it's set correctly. I'm also confused about the differential: it seems smooth, but how tightly should the nut be screwed down? My friends say that it should slip a little, but isn't that what the slipper clutch is for? Do you have any ideas? [email]

BOBBY CURCHMAN

The Stealth transmission that comes with Associated's line of off-road trucks and buggies is not very complex, and when it's assembled properly, it requires very little maintenance and only periodic adjustment. Start by pulling out the assembly manual that came with your B2. Go to the section on building the tranny and review the instructions on how



tight the main center screw for the differential needs to be. If memory serves me, I believe you should bottom out the spring then back it off $\frac{1}{8}$ turn.

The slipper clutch should slip for the first foot or two of takeoff from a dead stop; I've found that easiest to set "by ear." Put the car on the track, and hit the throttle hard, much as you would at the beginning of a race.

Listen carefully; you'll hear the slipper working and then hooking up. Set it so it slips for no more than 2 feet or so. Again, your manual can help. You'll have to reset the slipper clutch from time to time, depending on the tires, track conditions and the type of motor you installed.

Another option is just to leave the slipper very tight. Many drivers use the slipper clutch simply to protect the transmission, and they just tighten it until it doesn't slip.

Extreme Results From RRP.

Richard Saxton Chooses Precision Components From Robinson!



1998 World Cup and National Champion Richard Saxton:
"I only care about performance, and that's why I run Robinson Racing gears and slipper clutches exclusively."

— Richard Saxton



Absolute Series Pinions:
Available in 48P in 16T thru 28T sizes. Super hard, lightened and cut unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone! RRP 1416 - RRP 1428.



Absolute Series Spurs: Available in 48P in 80T thru 91T, this is the quietest spur you can buy! RRP 1780 - RRP 1791.



RC10 GT Clutch Bells:
Precision machined one-at-a-time from a single piece of steel and then hardened. Fits ALL Associated and MIP shoes. (New 14T) RRP 2214 - RRP 2224.

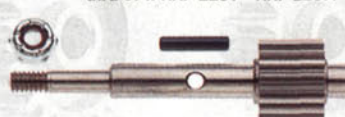


RC10 GT Gas Spurs: Super tough and precision machined from heat-resistant plastic mesh flawlessly with our Clutch Bells. 32P in 61T thru 67T. RRP 2261 - RRP 2267.



Associated Blue Lightened Slipper Kit:

The rear plate is hard anodized to reduce wear and the front plate is color treated. The front plate is designed to hold the slipper pad forcing the pad to slip on the rear plate. When pad shows sign of wear just flip it over for a new surface. Metal parts are CNC machined for a flawless fit. RRP 1515.



Titanium Stealth Top Shaft: CNC Machined from a single piece of titanium, this super hard, super light top shaft will fit any Stealth transmission. No serious racer should do without this part. RRP 1512.

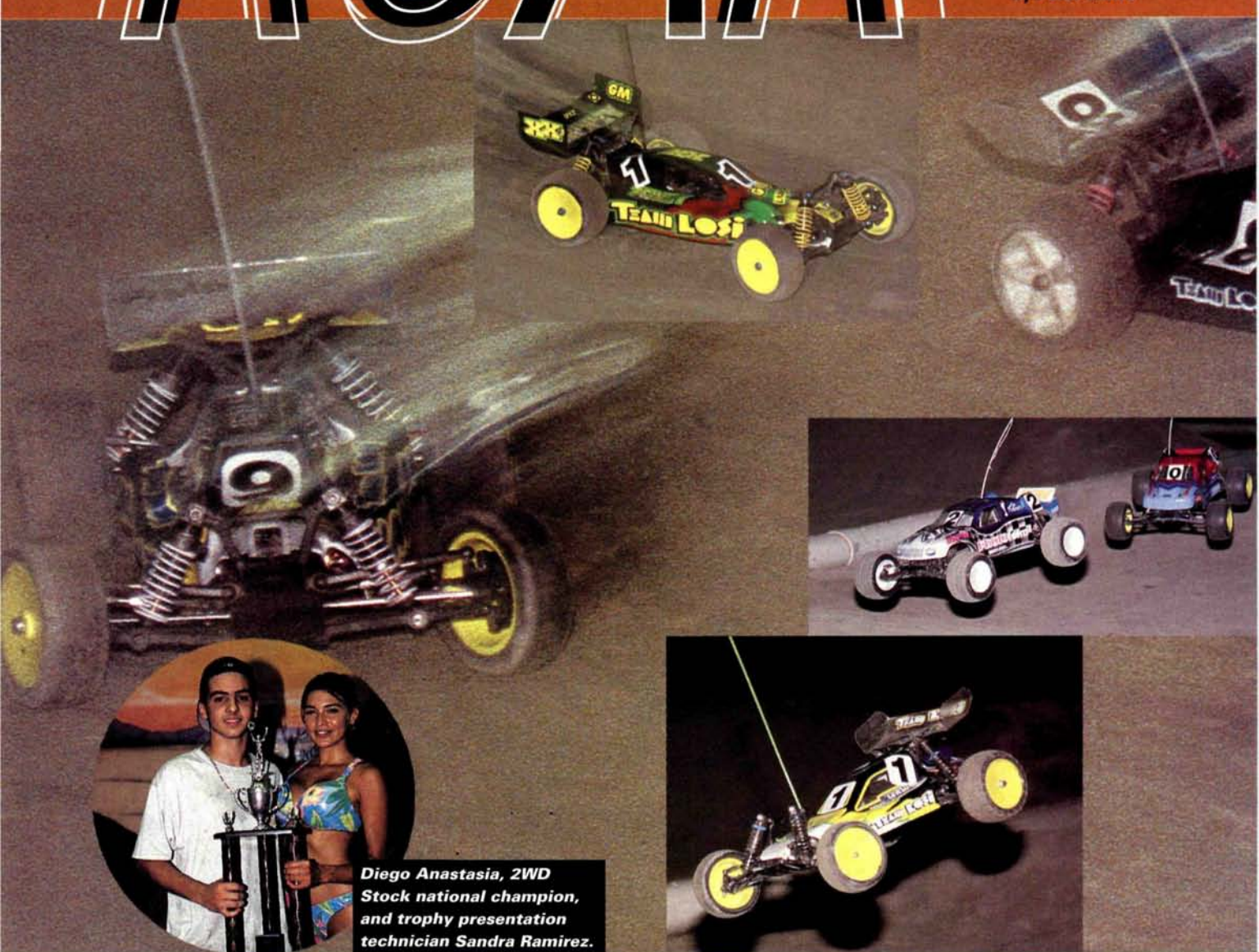
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1999 ROAR Stock

by Peter Vieira



Diego Anastasia, 2WD Stock national champion, and trophy presentation technician Sandra Ramirez.

Big-time modified RC car racing gets a lot of attention from casual club racers, but serious competitors looking to test their mettle know it's the ROAR Off-Road Stock Nats that gives them the chance to see who really rules in the dirt. In stock, no amount of factory backing can give a driver a real advantage. It's all about skill, and that means the racing is close, pride is on the line, and the action is hot; and if you were at the Stock Nats, you know the kind of heat I'm talking about!

2WD BUGGY A-MAINS

• **Round 1.** This was Diego Anastasia's race all the way; he led from tone to tone and put nearly 3 seconds between his Double-

X and the second-place car. The two-spot was held by only one driver throughout the race—Diego's "Team Loco" teammate Rob Betts. Rob actually qualified third, but he saved his best driving for the Mains. Completing the 1-2-3 freight train was Vincent Noccella, another Team Loco local who brought out his best stuff for the Nats. Like his buds Rob and Diego, he never relinquished his position.

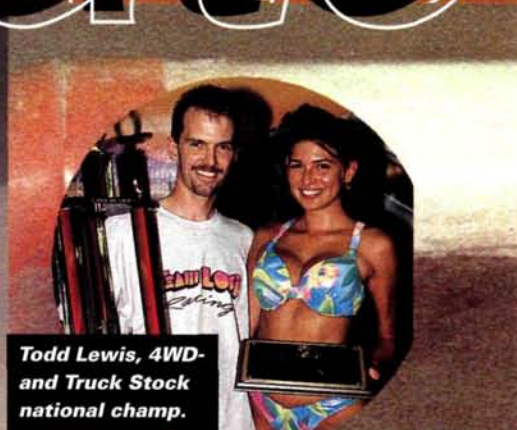
• **Round 2.** The second round was one of the day's cleanest, as the top five cars held their positions for 11 of the 13 laps. That's not to say they were in qualifying order, however; Todd Lewis (fifth qualifier) and Justin Morrison (fourth) swapped places to

STOCK NATS OBSERVATIONS

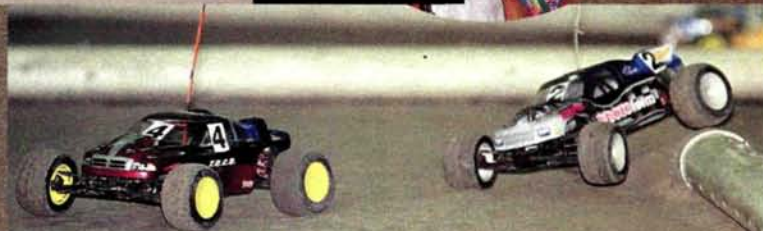
- Number of times the announcer advised the Junior drivers to "clean it up out there": about 10.
- Number of times the announcer advised the Masters drivers to "clean it up out there": about 23.
- Damn, it was hot!
- Where were the jumps? You'd think the track at a national event would be tougher than the typical club setup.

Who beat the heat?

Off-Road Nats



Todd Lewis, 4WD- and Truck Stock national champ.



take fourth and fifth places, and second qualifier Vincent Noccella and number three, Rob Betts, settled into third and second, respectively. Diego, meanwhile, maintained a commanding lead from the tone. Unfortunately, that lead evaporated on lap 11 when he parked his Double-X on a pipe and allowed Rob Betts to get around for the lead and the win. The mistake should not have cost Diego the lead, but the marshals were distracted as the announcer reprimanded a marshal on the other side of the track. Diego's Losi machine was marshaled in time to take second, and Vincent Noccella kept his Double-X in the third-place position he had earned in the race's first moments. Todd Lewis and Justin Morrison also stayed put to secure fourth and fifth.

• **Round 3.** The third Main played out much like the first, as Diego won in convincing style by leading on every lap. Vincent Noccella held off Rob Betts for three laps, but a single deep turn gave Betts the opening he needed to take second. Diego and Rob were both looking to take the national title, but the Team Loco drivers kept it clean. Of course, it's easy to drive clean when you're putting an entire straightaway between you and second place, as Diego did when he stretched out his lead. After five minutes of racing, Diego led his Team Loco crew with a win and a national title. Rob Betts and Vincent Noccella took second and third in the Main as well as in the overall 2WD standings.

■ If you like dance music, you'll like New York radio. But if I hear "Believe" by Cher one more time, I believe I may have to hurt someone. ■ If you have to run slicks, it isn't off-road racing—just my opinion. ■ East Coast racers are crazier than West Coast racers. Start sending those angry emails. ■ Damn, it was hot! ■ Masters guys make lousy corner marshals. ■ The crew at Long Island Raceway set up giant industrial fans to >>>

ROAR Stock Off-Road Nats



TRUCK A-MAINS

• **Round 1.** Top qualifier Jason LaDow was able to keep his Associated T3 on the pole only for a single lap before a tangle with Justin Morrison netted a warning for Justin and allowed Trinity's Todd Lewis's Double-XT to pass cleanly to take first. That was the end of the first-place battle, as Lewis put the smack down with a convincing 9-second victory over fifth-place qualifier Chris Marsh. Chris drove impressively to hold on to second after the Morrison/LaDow crash had allowed him to sneak in behind Lewis, and he even challenged Todd until Chris piped his car and let Lewis walk away. After lap 3, the order of the top four did not change; at the finish, it was Lewis, Marsh, Morrison and Jesse Robbers. Jason LaDow went from TQ to a disappointing ninth finish. Some days, you bite the bear; some days, the bear bites you.



The hard, fast, and mostly obstacle-free track had racers searching for traction. Most of the A-Main drivers found the stick they needed with Team Losi rubber and Trinity Zip Grip traction compound.

• **Round 2.** Jason LaDow showed his TQ form as he sped around the track, but Todd Lewis knocked on his door after getting around Rob Betts's piped truck for second place. Josh Knight hitched up to the freight train in third and pushed Lewis hard in a bid for the second spot. Not that Knight didn't have his own troubles; Rob Betts, still looking for a win, was battling for third on his way to the front. On lap 8, everything came apart for leader Jason LaDow when he rolled his T3 and recovered only in time to take fourth. Now it was Lewis, Knight and Betts who battled for the lead. Knight went

continued on page 139

KAMAKAZI TACTICS

At the club level, stock racers may run any ROAR-legit stock motor they choose, but at nationals, regionals and other big events,

the "handout" motor represents the ultimate in horsepower control. All racers rare given one stock motor per class (cost is included in the sign-up fee) and the option to purchase one additional motor per class. Although everyone may start out with the same motor, heavy tweakin' goes on in the pits to find a horsepower advantage.

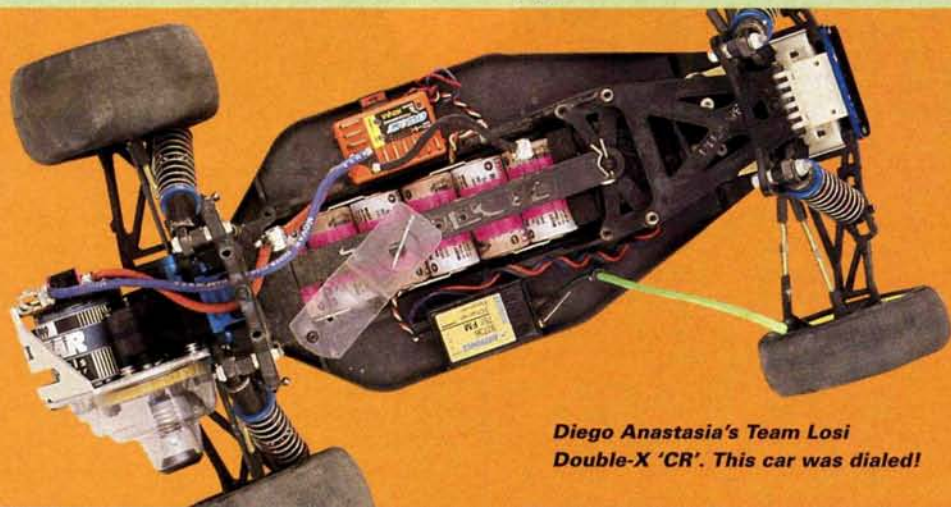
The official ROAR handout motor is the GM* Pinnacle, and all the cars at the Nats had solid stock-motor scoot, but some guys had more yank than others. Diego Anastasia's winning Double-X 'CR' had an advantage thanks to a Kamakazi* tuned motor, and other A-makers—such as Dave Antos, Clarence Barbour and Eric Clark—were also Kamakazi-powered.

Here is the tuning process used by Kamakazi's Jon Noon:

- 1 Remove both brush hoods and hardware.
- 2 Break in the bushings by spinning the armature with a Dremel tool (high-speed setting). Do not lube the bushings.
- 3 Lubricate the bushings with Finish Line* Racing Gel, and continue break-in with Dremel tool for another minute.
- 4 Wipe off the excess Racing Gel and relube with bushing oil.
- 5 Reinstall the brush hoods and align them with a Parma/PSE* hood-alignment tool.
- 6 Prepare 10-percent-silver-compound brushes by drilling $\frac{3}{32}$ -inch hole in each brush face. Offset the hole toward the spring-post side of the brush face.
- 7 Replace the stock springs with a "medium" Trinity* copper spring on the negative post and a "medium-heavy" green spring on the positive one.
- 8 Break in brushes by running the motor at 5 volts for 4 minutes. Jon uses his Competition Electronics* Turbo 30 for this, and he dynos his motors at 7.5 volts on a Robitronic* Pro Master dyno.



Chelsea Petre doin' a little wrenchin' before the Mains. She came from Hamilton, Ontario, Canada, with her brother and dad.



Diego Anastasia's Team Losi Double-X 'CR'. This car was dialed!

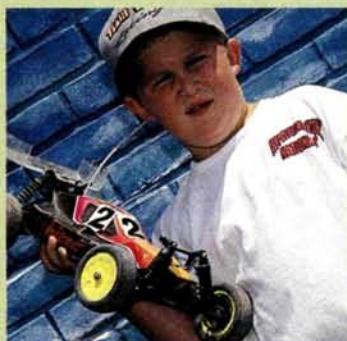


>>> help racers cope with the heat. This allowed racers the option of standing in still hot air or in blowing hot air. ■ Many racers stayed at a local motor inn that uses the slogan "Not just a bed." Trust me; it's just a bed. ■ The temperature was well over 90 degrees in the parking lot. Racers were going there to cool off. ■ A Burger King within walking distance of the track was the breakfast, lunch and dinner destination for most racers.

Jammin' Juniors

RC racing lets drivers of all ages compete together, but if you want to see how you measure up against fellow drivers who aren't adults, take a crack at the Junior 2WD class. It's open to drivers up to 15 years old, although ROAR might want to consider adding a plywood clown to the drivers' stand with a sign that reads, "You must be shorter than me to be in the Juniors' class." It seems that one of the parents of a Junior driver felt another driver might be an over-16 sandbagger, based on his height (and driving skill, no doubt). New ROAR prez Thomas "T-Rex" Baldwin settled the matter when he put out the call to all parents to present proof of birthdate for their young drivers. This resulted in a mad scramble of faxes and phone calls from Long Island Raceway, as anxious parents worked to prove that their 4-foot-tall, prepubescent racers were indeed not of driving age. Hey; rules are rules. Here's how they finished and what they were drivin':

- | | |
|-------------------|-------------------------|
| 1 Billy Kibler | Team Losi Double-X 'CR' |
| 2 Adam Lakas | Team Losi Double-X 'CR' |
| 3 Brian Jones | Team Losi Double-X 'CR' |
| 4 Kris Hare | Team Losi Double-X 'CR' |
| 5 Drew Loftus | Associated RC10B3 |
| 6 Mike Martin | Associated RC10B3 |
| 7 Cody Miller | Associated RC10B3 |
| 8 Derek Petre | Associated RC10B3 |
| 9 Joe Gallant Jr. | Team Losi Double-X 'CR' |
| 10 Justin Bravo | Associated RC10B3 |



Has anyone mocked your driving by saying a 6-year-old could beat you? Meet the 6-year-old: Joe Gallant Jr., the youngest racer in the Junior class.

Crazy from the heat

New York's Long Island Raceway is an excellent racing facility, but when you pack a few hundred racers under a tin roof, add a heat wave and poor ventilation, you have one heckuva hot event—and I mean hot, as in huge sweat rings, feeling nauseated, pour-liquid-nitrogen-in-your-pants hot. It was at least 110 degrees in the pit area—like working in a toaster oven. Even with the best efforts of the track operators (two words: huge fans), there was just no beating the heat.

Despite the discomfort, racers sucked it up and got down to business, and the event went smoothly. Good job, guys.

Masters mayhem

To race in Masters class, you don't necessarily have to be a master of R/C driving, but you do have to be, well, old. (Over 40? You're in.) Now, you might think the Masters guys are pretty mellow; but take my word for it, they drive hard and take no prisoners! After 3 A-mains, the Masters Truck class finished like this:

- | | |
|------------------------|---------------------|
| 1 Gary Adamson | Associated RC10T3 |
| 2 Martin Petre | Associated RC10T3 |
| 3 Earl Valles | Associated RC10T3 |
| 4 Matt "the Cat" Walsh | Team Losi Double-XT |
| 5 Donovan Grey | Team Losi Double-XT |
| 6 Jim Franz Sr. | Team Losi Double-XT |
| 7 James Grego | Team Losi Double-XT |
| 8 William Mishko | Team Losi Double-XT |
| 9 Gary Bennett | Team Losi Double-XT |
| 10 Gary Jones | Associated RC10T3 |



GM/Losi driver Darrin Leist says he has tried to get his picture into the mag for six years. OK, Darrin; you're in. Now what?



New ROAR prez Thomas "T-Rex" Baldwin kept everyone on the straight and narrow.

Todd Lewis's winning Team Losi Double XT 'CR'. Hey, Todd; make sure Losi reimburses you for the 50 cents you used as weights.

Todd's four-wheeler. The 4WD A-main was nuthin' but Losi Double X4s.

Have you ever had fast food for breakfast, lunch and dinner? It already starts to get old halfway through breakfast. ■ Once you pull out of the Long Island Raceway parking lot, you can't go anywhere without making about 80 U-turns. ■ Of the 40 A-main vehicles, 27 were from Losi and 13 from Associated. The four-wheel class was all Losi. Schumacher and Yokomo make great cars too, y'know. ■ Did I mention it was hot?

ROAR Stock Off-Road Nats

TRUCK STOCK

Fin.	Qual.	Driver	Chassis	ESC	Radio	Batteries	Body	Tires (F/R)	Pinion/Spur
1	2	Todd Lewis	Losi XXT 'CR'	GM V12	Airtronics	Trinity VIS	Losi	Losi (w/Trinity Inserts)	23/88
2	3	Rob Betts	Losi	GM	Airtronics	GM Racing	Losi	Losi Red	23/88
3	4	Justin Morrison	Losi	LRP V6	Airtronics	Team Orion	Jammin'	Losi/Trinity	22/84
4	5	Chris Marsh	Losi XXT 'CR'	GM V12	Airtronics	World Class 2000	Stock	Losi (w/Trinity Inserts)	21/88
5	6	Jesse Robbers	Losi XXT 'CR'	Tekin G-12CIII	KO Propo	Team Orion	Losi	Pro-Line/Losi	20/88
6	9	Diego Anastasia	Losi	Novak	Airtronics	Kamakazi	Losi	Losi	21/88
7	8	Randy Esposito	Losi	Novak	Airtronics	Trinity	Losi	Losi (w/Trinity Inserts)	21/87
8	7	Josh Knight	Associated T3	GM V12	Airtronics	Reedy Zappers	Pro-Line	Losi (w/Trinity Inserts)	19/87
9	1	Jason LaDow	Associated T3	Tekin G-10 Pro	JR R-756	Peak PowerFlo	Associated T3	Pro-Line	19/87
10	10	Dave Antos	Losi	Novak	Futaba 3PS	Kamakazi	Losi	Losi	21/88

STOCK BUGGY

1	1	Diego Anastasia	Losi XX 'CR'	Novak	Airtronics	Kamakazi	Losi	Losi	22/82
2	3	Rob Betts	Losi	Novak	Airtronics	GM	Losi	Losi	22/82
3	2	Vincent Noccella	Losi XX 'CR'	Novak	Airtronics	Trinity	Losi	Losi (w/Trinity Inserts)	22/82
4	5	Todd Lewis	Losi XX 'CR'	GM V12	Airtronics	Trinity VIS	Losi	Losi (w/Trinity Inserts)	30/82
5	10	Matt Longfield	Associated B3	Tekin G10	JR R756	Reedy WC Zappers	Associated B3	Pro-Line	21/81
6	6	Eric Clark	Losi	Novak	Airtronics	Kamakazi	Losi	Losi	22/82
7	3	Justin Morrison	Losi	LRP V6	Airtronics	Team Orion	Jammin'	Losi/Trinity	22/84
8	9	James Franz Jr.	Losi XX 'CR'	Novak	Airtronics	Trinity	Losi	Losi (w/Trinity Inserts)	29/82
9	8	Randy Esposito	Losi	Novak	Airtronics	Trinity	Losi	Losi (w/Trinity Inserts)	22/82
10	7	Jason LaDow	Associated B3	Tekin G10	JR R756	Peak PowerFlo	Pro-Line	Pro-Line	21/82

4WD STOCK

1	1	Todd Lewis	Losi XX 'CR'	GM V12	Airtronics	Trinity VIS	Losi	Losi (w/Trinity Inserts)	24/82
2	2	Rob Betts	Losi	Novak	Airtronics	GM	Losi	Losi	23/84
3	5	Diego Anastasia	Losi	Novak	Airtronics	Kamakazi	Losi	Losi	23/84
4	7	Dave Antos	Losi	Novak	Futaba 3PS	Kamakazi	Losi	Losi	22/84
5	8	Charles Higgins	Losi XX4	Novak	Futaba 3PJ	B&T Blister Packs	Losi	Losi	22/82
6	6	Chris Systma	NA	NA	NA	NA	NA	NA	NA
7	3	Justin Morrison	Losi	LRP V6	Airtronics	Team Orion	Jammin'	Losi/Trinity	22/84
8	4	Vincent Noccella	Losi XX4	Novak	Airtronics	Trinity	Losi	Losi (w/Trinity Inserts)	22/84
9	10	James Franz Jr.	Losi XX4	Novak	Airtronics	Trinity	Losi	Losi (w/Trinity Inserts)	23/84
10	9	Clarence Barbour	Losi XX4	Tekin G9	Airtronics	Kamakazi	Losi	Pro-Line/Losi	29/82

This Touring



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continued from page 136

wide through the roller section of the track and gave Betts the chance he needed to take second. Todd stretched out a comfortable lead and rolled across the line first to take the national championship; with his first- and second-round wins, the Stock Truck title was his, and he could sit out the third Main.

Round 3. Todd Lewis sat out the third A-main to let other racers battle for the second through 10th spots, but instead of chilling in the pits (which would have been impossible, given the sweltering heat), Todd handled the mike to announce the final Truck A-main. TQ Jason LaDow had another difficult race, as a third-lap error dumped him into sixth. Robb Betts moved quickly into first, Justin Morrison grabbed second, and Randy Esposito made a jump from fifth to third in a single lap. Rob Betts's only real challenge came from Justin Morrison, until he piped his Double-XT, and Morrison took the lead. With 35 seconds left to race, Robb kept a cool head and retook the lead only moments before completing the final lap for a satisfying win and a number-two Stock Truck national ranking.

4WD BUGGY A-MAINS

• **Round 1.** Close racing was the order of the day in four-wheel (or, if you prefer, the Team Losi Double-X 4 class), as the top four qualifiers flew around the track with only 1 second between them. TQ Todd Lewis held off Rob Betts for the first five laps until Todd tapped a pipe and gave Rob an easy pass. As Justin Morrison defended his third-place position, Diego Anastasia worked feverishly from mid-pack and steadily advanced to fifth and then fourth place with his sights on the leaders. Morrison bobbled and let Diego by, and Diego even got around Lewis for one lap, but a challenge from Rob Betts got them tangled and allowed Todd Lewis to secure an A-main victory to go with his truck win. Rob Betts rolled in for spot two, and Diego picked up three.

• **Round 2.** After he had secured the Stock Truck title with back-to-back A-main wins, Todd Lewis set his sights on a repeat of the feat in four-wheel. Diego Anastasia, however, was not about to hand him the win. Shortly after the starting tone, Diego took advantage of a first-turn pileup to move into second and stuck close to Todd Lewis's bumper. Diego turned some of the fastest 4WD laps, but he could not string enough of them together to take the lead—although he could have, if he wasn't a good sportsman (when Diego made contact with Lewis in a bad pass, he chose to back off and allow Todd to regain his position). Despite the challenge, Todd held off Diego long enough to win the Main and the 4WD Stock national champion title.



Jack Bonhomme
(Team Marvin) wore
his Martian helmet in
every one of his races.

Round 3. Once again, Todd Lewis sat out the Main since his first- and second-round wins had already earned him the number-one title. At the start, number-two qualifier Rob Betts filled the void left by Lewis to take the lead and made it stick with a tone-to-tone win. Charles Higgins launched into second from the eighth spot, but he was knocked back to third at the halfway point by Diego Anastasia. Dave Antos (who had been racing for only eight months) and Chris Systma never budged from fourth and fifth once they had settled there after the first-lap shakeout. Despite a constant challenge from Diego, Betts held on for the final A-main win and took the second spot overall behind Todd Lewis.

**Addresses are listed alphabetically in the Index of Manufacturers on page 241. ■*

Car Bites!

Until now, things have been quite pleasant in the gas touring car world. But that's about to change.

Now there's a Serpent to contend with. The all-new Serpent Impulse harnesses the world championship technology of the Serpent Vector and Impact M2 to a 1/10th scale, 200mm touring car. With a 4-wheel independent suspension that's based on the award winning Impact M2 design, front and rear steel-gear differentials, unique externally adjustable double-piston shocks, and a CNC machined 7075-T6

aluminum chassis, the Serpent Impulse is yet another example of race-car artistry from the world's most successful maker of radio-control automobiles.

There's a snake on the grid. Now we'll see how fast the rest of the field can run.



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TROUBLESHOOTING

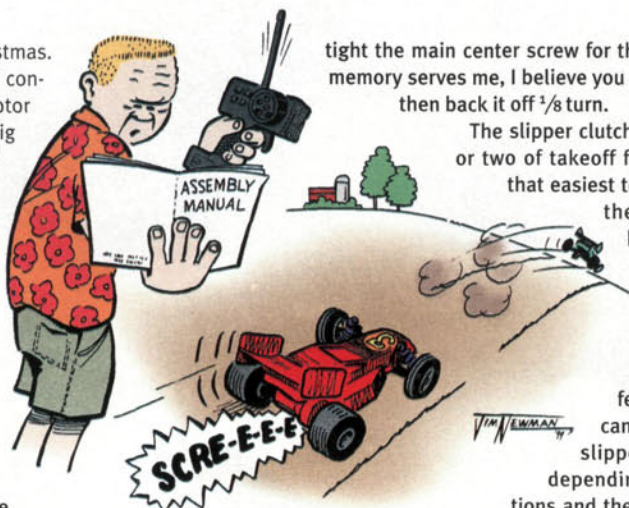
BY DOUG MERTES • ILLUSTRATIONS BY JIM NEWMAN

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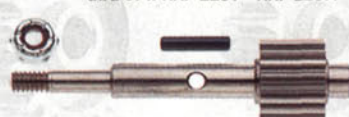


RC10 GT Gas Spurs: Super tough and precision machined from heat-resistant plastic mesh flawlessly with our Clutch Bells. 32P in 61T thru 67T. RRP 2261 - RRP 2267.



Associated Blue Lightened Slipper Kit:

The rear plate is hard anodized to reduce wear and the front plate is color treated. The front plate is designed to hold the slipper pad forcing the pad to slip on the rear plate. When pad shows sign of wear just flip it over for a new surface. Metal parts are CNC machined for a flawless fit. RRP 1515.



Titanium Stealth Top Shaft: CNC Machined from a single piece of titanium, this super hard, super light top shaft will fit any Stealth transmission. No serious racer should do without this part. RRP 1512.

"Turn to Robinson Racing when compromise is out of the question."

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HOME BUILT PROJECT

by Paul Conrad

MOST PEOPLE START AN RC project with a car, truck, or buggy vehicle and build on the existing chassis. One person might install a roll cage, another may decide to drop in two engines, and others may anodize every piece of metal on the vehicle.

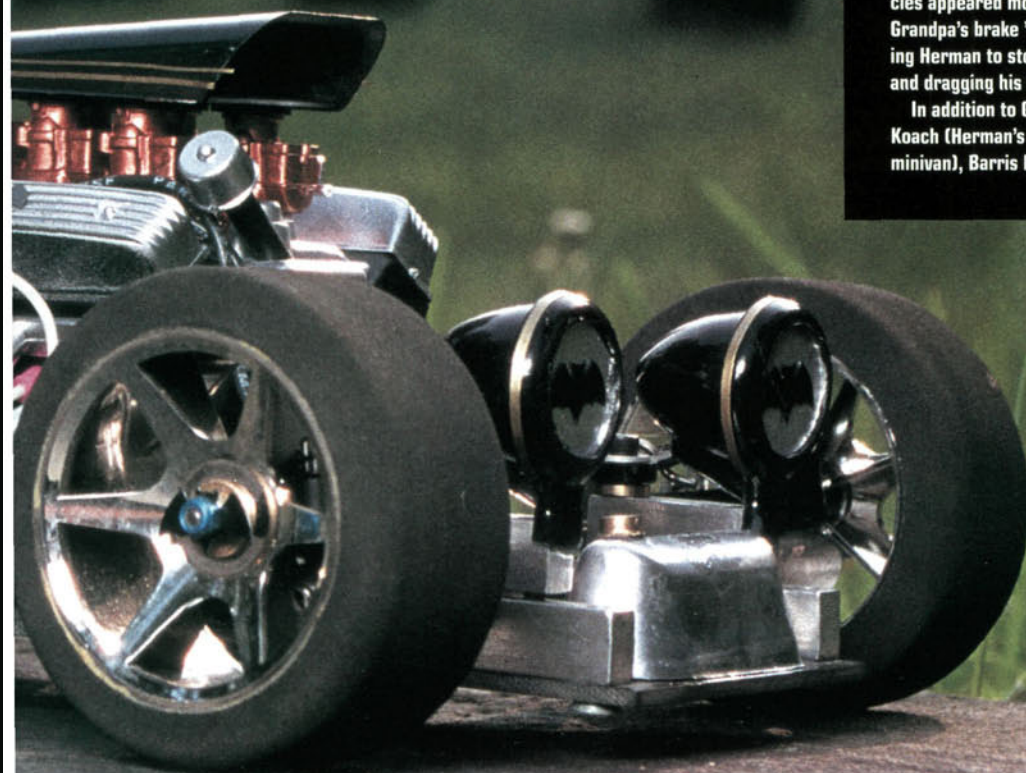
Well, I have two words for all you big-dollar-project freaks: coupon box!

My latest project started life as a plain, old coupon box that my wife was about to toss into the trash can. "Wait; this hunk o' plastic could come in handy some day," I thought. Hmm. Parts bin? No. Shock-oil storage? Uh-uh. Then, as the kitchen light caught the box just right, and the music in my head swelled gloriously, an idea was born! Why not build an RC coffin-mobile, similar to the one Grandpa had in the classic television series, "The Munsters"? The decision was made, and my version of the coffin-mobile went into production.

Munsters Coffin-Car



Grandpa's Wild ride



MEET GEORGE BARRIS, KING OF THE KUSTOMIZERS

Anyone who is a fan of wild Hollywood custom cars is certainly familiar with the work of George Barris, creator of such memorable machines as the Batmobile, from the intentionally campy "Batman" of the '60s, and KITT, David Hasselhoff's talking Trans Am from the unintentionally campy "Knight Rider" program of the '80s. George was one of the earliest hot-rod pioneers and first took a torch to sheet metal in the '40s when he was still a high-school student. In an era of tacked-on foxtails and other gewgaws, George was a true craftsman who innovated many of the hot-rod conventions, such as chopping, channeling, lowering and recessing lights and accessories.



Although somewhat less well-known than the previously mentioned superhero cars, the blown drag racers Barris created in his Barris Kustoms shop for "The Munsters" program are probably more potent machines; whereas KITT and the Batmobile hid their engines from view (allowing stock powerplants to remain in place), Herman and Grandpa Munster both drove drag machines outfitted with fully visible, blown V-8 mills and suitably wide drag rubber. I admittedly recall little of the action from the "Hot Rod Herman" episode in which the vehi-



cles appeared most prominently, but I do remember that Grandpa's brake 'chute was sabotaged by another racer, forcing Herman to stop the car by grabbing hold of the rear axle and dragging his heavy Franken-feet. Hey, it could happen

In addition to Grandpa Munster's ride and the Munster's Koach (Herman's "family" vehicle, best described as a Gothic minivan), Barris Kustoms created The Monkees'

Monkeemobile, The Green Hornet's automobile, the cars of "77 Sunset Strip," "Herbie, the Love Bug," and even the Beverly Hillbillies' jalopy. More recent work includes the vehicles from the live-action "Flintstones" films, the recent feature-film Batmobiles and the latest James Bond BMWs. If it's custom and on film, it's probably a Barris Kustom creation!

HOME BUILT PROJECT

COFFIN FABRICATION 101

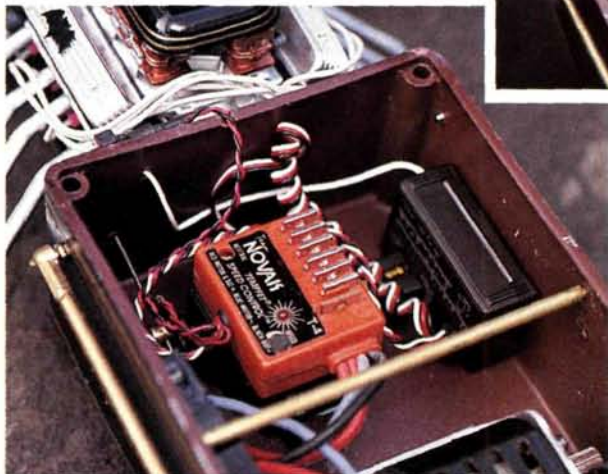
First I sanded the gloss coating off the coupon box so that the black paint would adhere properly and not chip off. I followed the instructions on the paint can and applied several light coats in 10-minute intervals to allow the paint to cure. When the last coat had hit the box, the result was a nice, smooth, glossy black finish—perfect for a miniature casket.

I set the box in a warm place to dry and figured it was time to pick a chassis for this application. The Parma* Hemi-Coupe was just what I needed because of its narrow, all-purpose design. It fit perfectly under the casket-cockpit, and the Munster machine started to take shape.

I lined up the Parma motor-mount/pod inside the box and drilled four 4-40-size holes through the coffin box and installed four screws through the box, chassis and into the motor mount. Now the hard part: I drilled holes on each side of the

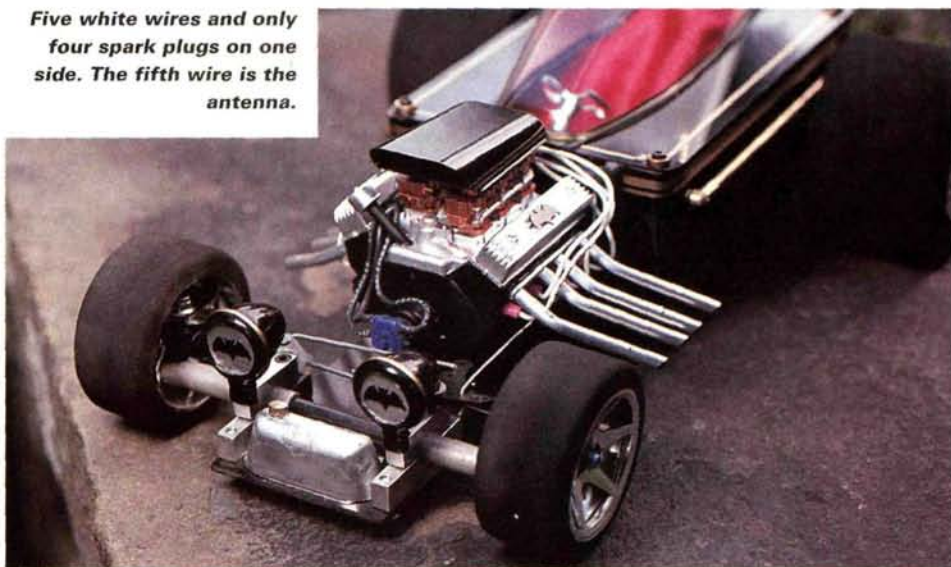


The old Cheetah front end I've been saving all these years came in handy. A simple bellcrank system is used for the steering.



Just because this old ESC is mounted in a coffin doesn't mean it's dead. I've had this Novak T-4 forever, and it's still as reliable as the day I bought it.

Five white wires and only four spark plugs on one side. The fifth wire is the antenna.

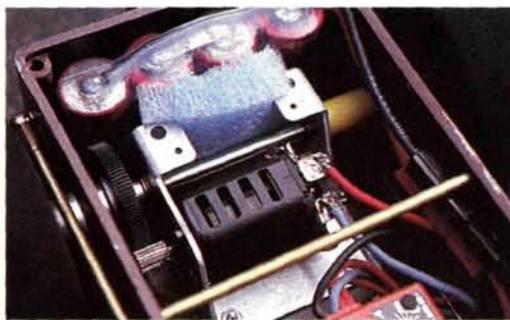


"coffin" for the rear axle and spur gear to fit through. I used a Dremel* tool because I needed a hole large enough for the 96-tooth spur gear to slide into so it fit inside the coffin.

CASKET CONTROL SYSTEM

To steer my creation, I used an old-style Cheetah on-road front end. This adjustable-width system allowed me to narrow the car's track, and the front end's large aluminum-block mounts add to the mean look of the vehicle. To complete the steering setup, I made a steering rod of music wire, installed it to the bellcrank on the front end and then to the servo.

The hard part now over, I mounted the electronics inside the coffin. I used some old RC equipment that was lying around:



Many of the parts on this car were taken from a Parma Hemi-Coupe kit, such as this motor pod and axle. Notice the big hole in the side that allows the spur gear and axle assembly to slide through.

a Futaba* receiver, an S148 servo and a Novak* T-4 ESC. OK; some of the stuff is really old! Newer gear was used in the motor department: I chose a Trinity* Midnight stock motor and built a 4-cell battery pack for power.

DETAILS

The Parma Hemi motor supplied with the Hemi-Coupe kit was painted, assembled and installed on the chassis with a self-tapping screw. I bolted rims and tires from the Coupe to the axles and stood back to admire my creation. It looked suitably creepy, but I had a few more steps to complete.

First, I installed grab rails on the sides of the coffin. I used 4-40 threaded rod with Associated ball cups on each side and slid a brass tube over the rod to cover the threads. There; now if Grampa's jack breaks, a couple of pallbearers can just hoist the car off the ground!

To make some "Munster-ized" hubcaps and other details, I picked up some little black bats from a card store to enhance the vampire motif (you know, those annoying little plastic pieces that people put inside Halloween cards to be cute that inevitably wind up on the floor and keep turning up until New Year's). I also used the bats as valve-cover insignia and headlight emblems.

In keeping with the drag theme of the "real" Munsters' car, I fabricated a parachute from some scrap cloth. I also raided my wife's fabric basket for the red velvet interior. An RC airplane canopy was perfect as a bubble windscreen. And, last, the front-mounted gas tank and steering wheel were robbed from a plastic toy. I pillaged the lights from the Hemi-Coupe kit and finished the coffin-mobile with some gold Pactra* pinstriping and Autographics* lettering.

GO, GRANDPA!

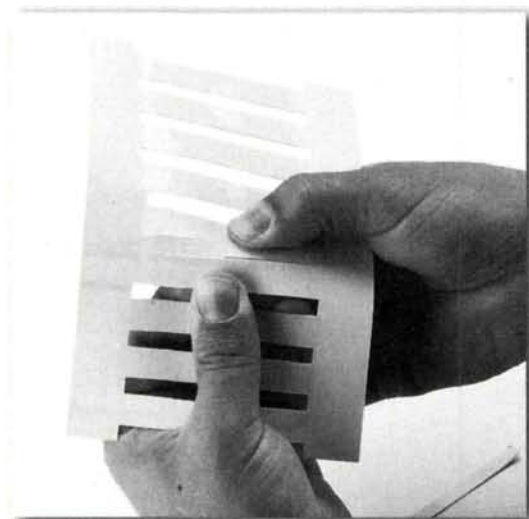
I usually keep the car in a showcase at my hobby shop (Xtreme R/C in New Milford, CT) posed with a Grandpa Munster action figure, and everybody seems to dig it. I do take it out for a run occasionally; while the 4-cell-powered Munster car won't set any speed records, it is the fastest coupon-box conversion I've ever driven!

**Addresses are listed alphabetically in the Index of Manufacturers on page 241.*

HOW TO 5 Easy-to-Make Problem-Solving Parts

by Hank Riley

OK; you've rebuilt all your cars, disassembled and rematched your packs, organized your toolbox, inventoried your hardware and alphabetized your decal collection. Great; just six months until the outdoor season kicks off again! Until then, try building these simple, problem-solving items. You may not fill six months (unless you decide to make your own Lexan), but you will while away some time at the bench, and the stuff you make will definitely come in handy later. So, until an indoor track opens up near you, let's get crackin'...

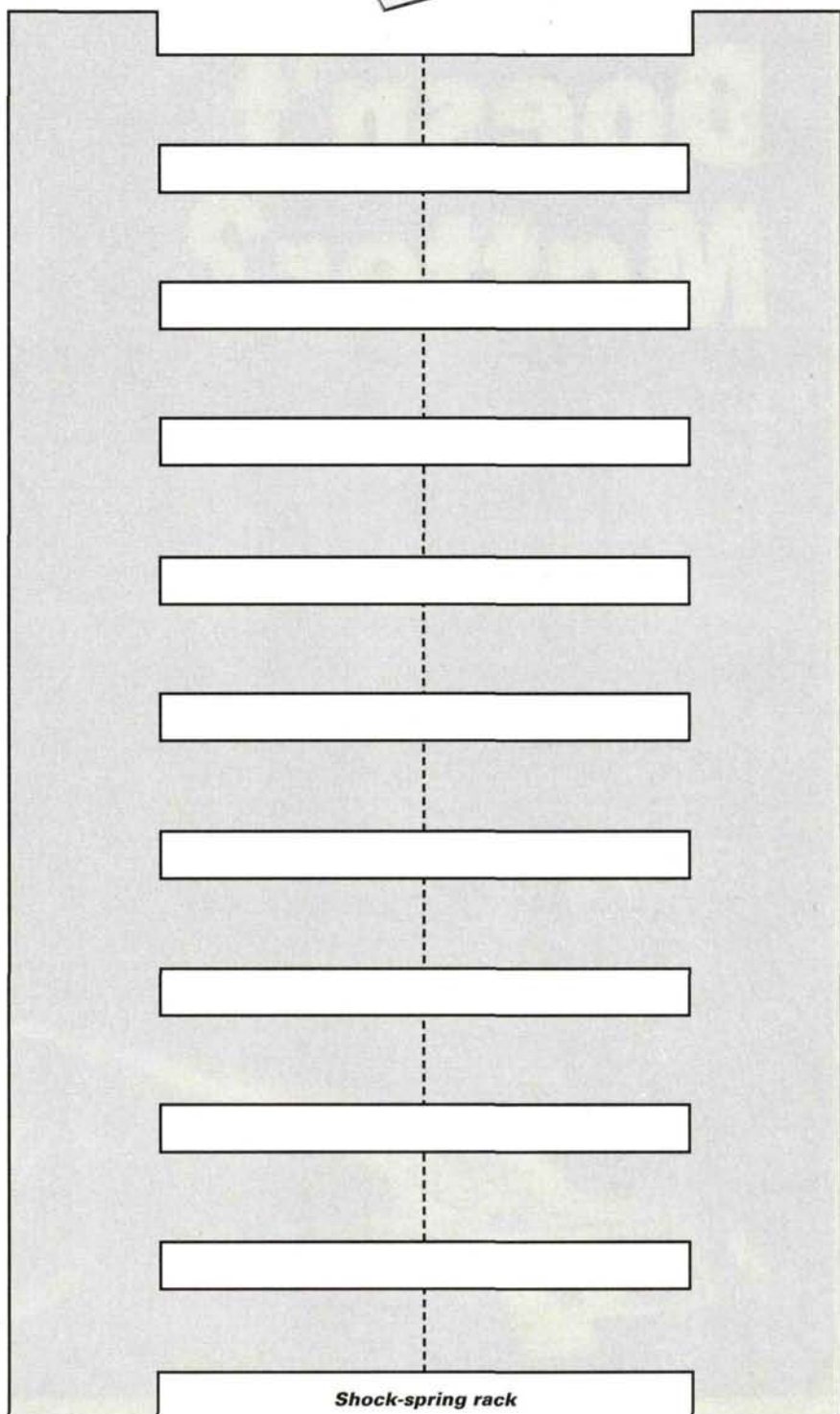
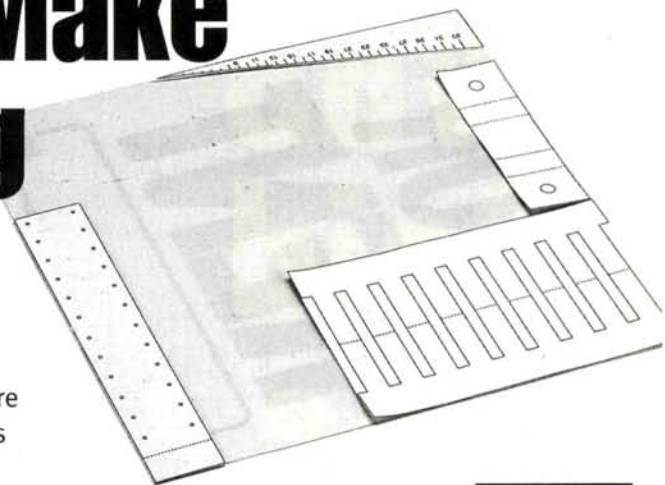


Score the plastic with a hobby knife, then flex it to remove the waste areas.

SHOCK-SPRING RACK

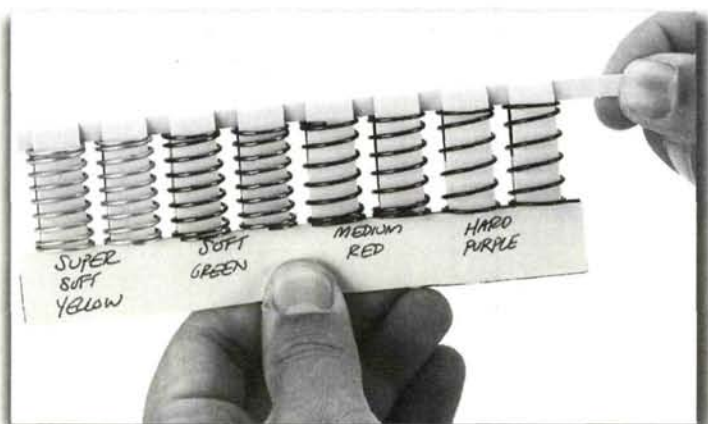
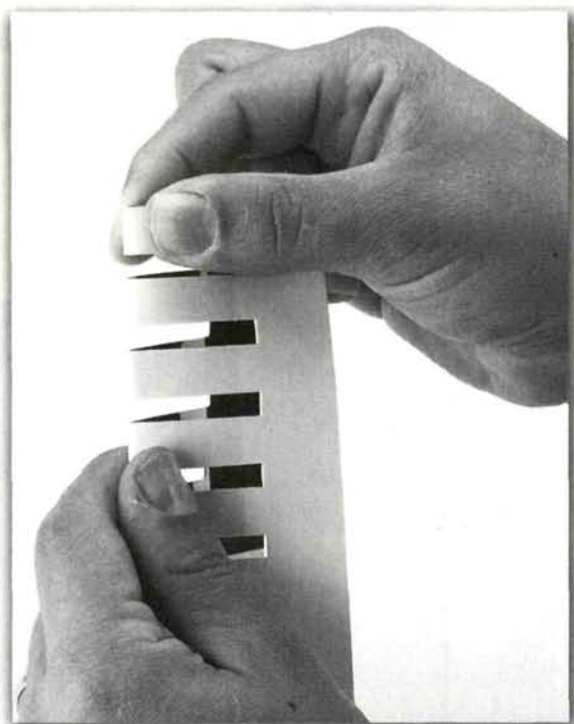
Isn't it time you organized those springs? This shock-spring rack can be made of Lexan, styrene, or stiff card in about five minutes, and it's easy to label the springs according to their stiffness.

This template is meant for touring-car springs, and will hold five pairs; you can add more "bars" to hold more springs. For off-road springs, make the bars longer.

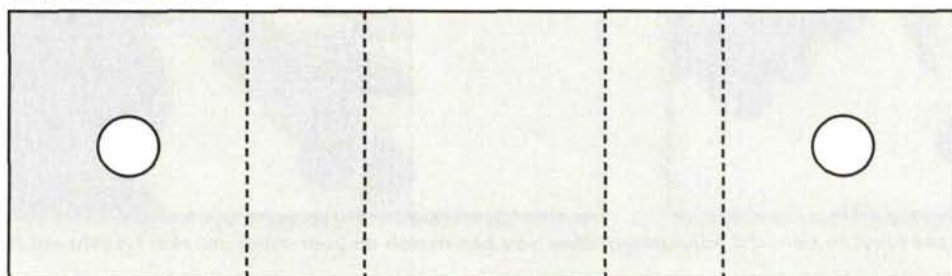


Shock-spring rack

Once the rack has been trimmed out, just fold it in half then slide your springs on. A strip of plastic slipped through the rack holds the springs in place.



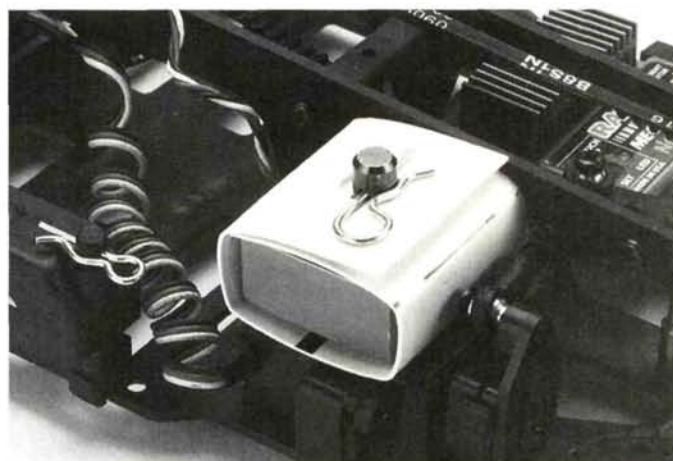
Transponder mount



TRANSPONDER MOUNT

After completing a meticulously masked, multicolored body, the last thing I want to do is poke more holes in it than are absolutely necessary. That's why I make a separate transponder mount from a piece of Lexan; sometimes, I can even make the mount out of scraps left over from trimming the body. As a bonus, the transponder will sit much lower in the vehicle for a lower center of gravity.

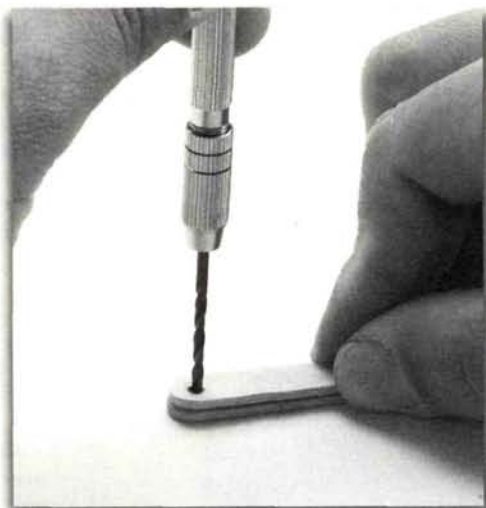
Ream the holes a bit oversize so their edges can be folded over the transponder. Don't score the fold lines, or the plastic will crack apart when you fold it.



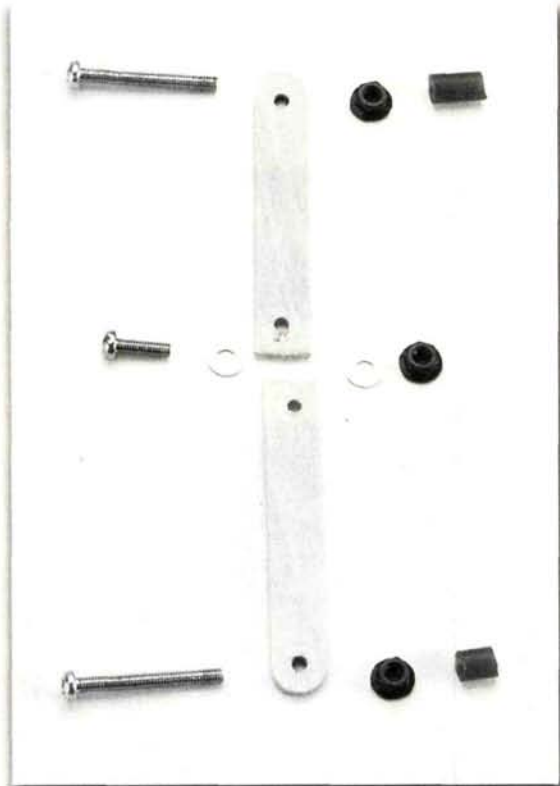
Tape the transponder mount into a convenient spot, then fold it over to hold the transponder in place.

SHOCK-LENGTH JIG

For best handling, it's critical that your car's left and right shocks be the same length, even if the actual measurement isn't all that important. This jig allows you to quickly check your shocks for equal length, and it gives you an excuse to kick back and enjoy a Popsicle.



Cut a Popsicle stick in half, then stack the halves. Drill a hole that is the same diameter as your shock's mounting screws through both ends of the stack. Here, I'm using a 2mm bit to match most touring-car shocks.

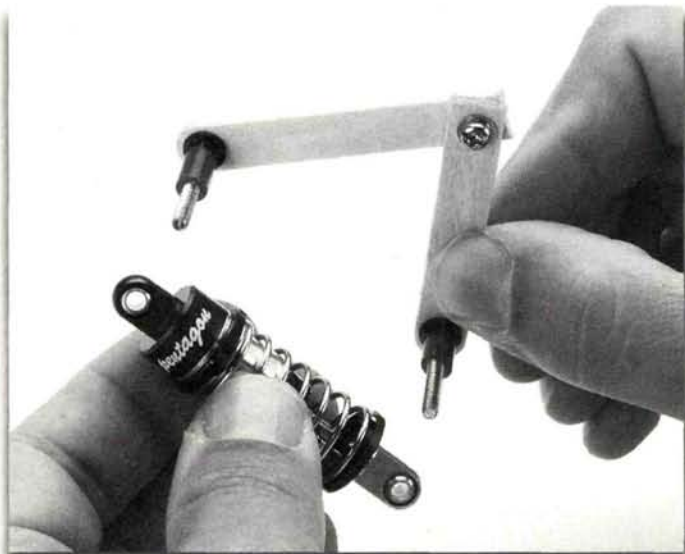


Now assemble the jig as shown; the washers will help the Popsicle sticks to pivot smoothly. Use a nylon locknut to hold everything together; tighten it enough to allow the Popsicle sticks to pivot yet enough to hold their position when released. The pieces of fuel tubing slide over the screws to act as standoffs.

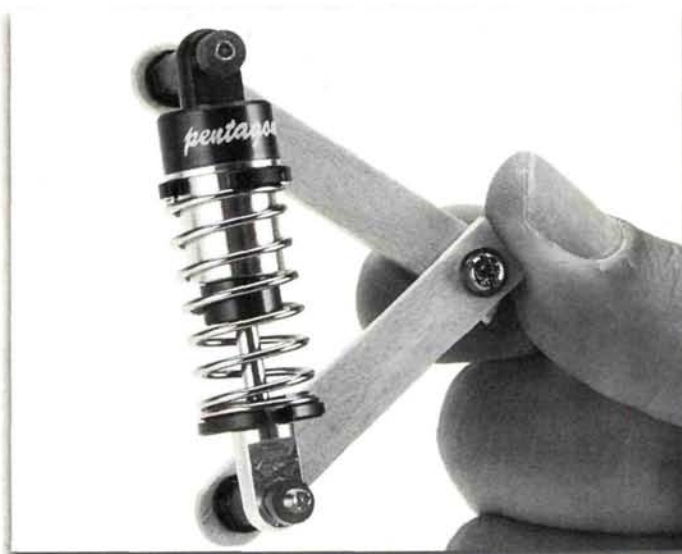


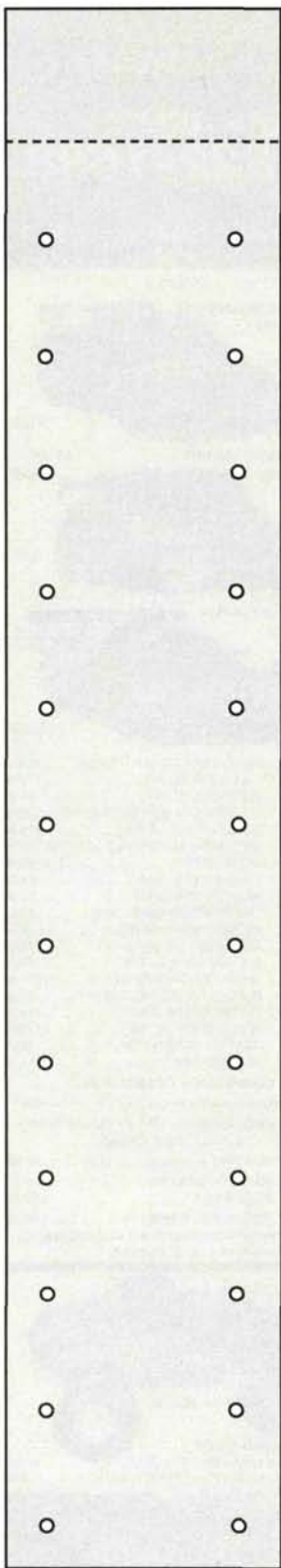
Where to get the stuff

Looking for Lexan? You can buy large sheets of Lexan from a plastics supply house; look under "Plastics" in the Yellow Pages. If you can't get a hold of Lexan, you can substitute sheet styrene from Plastruct (check the static model section of the hobby store) for it, although the parts won't be quite as durable. Last, if you can't find plastic stock anywhere, hit the hardware store and pick up a "For Sale" sign; these are usually made of sheet styrene—just right for the projects shown here.

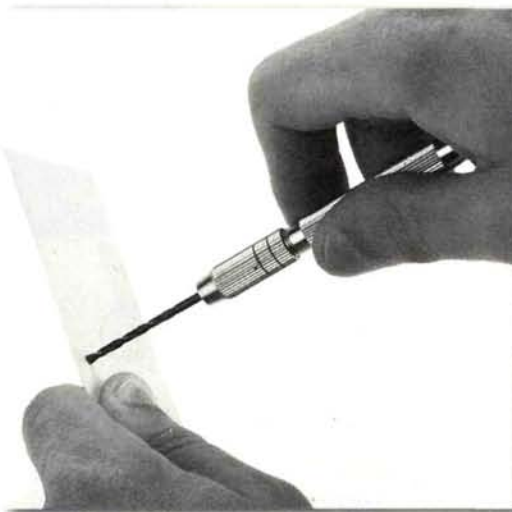


Mount a shock in the jig, then tighten the pivot to hold the adjustment. Now you can match up your other shocks; just thread the shock's rod end in or out to fit the jig.



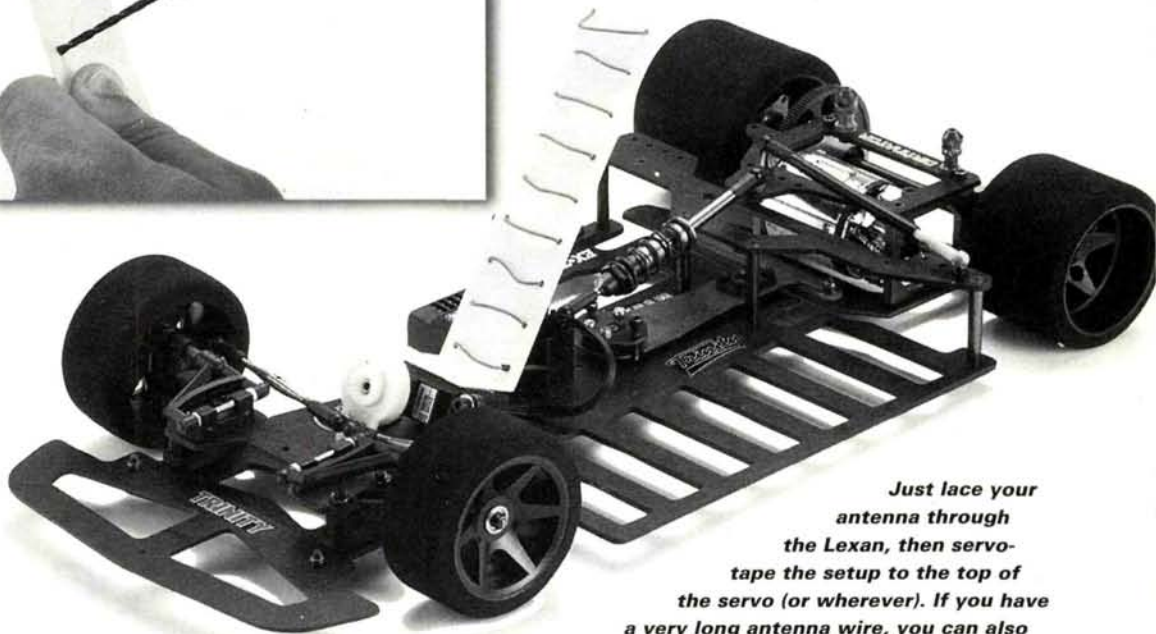


Inboard antenna mount



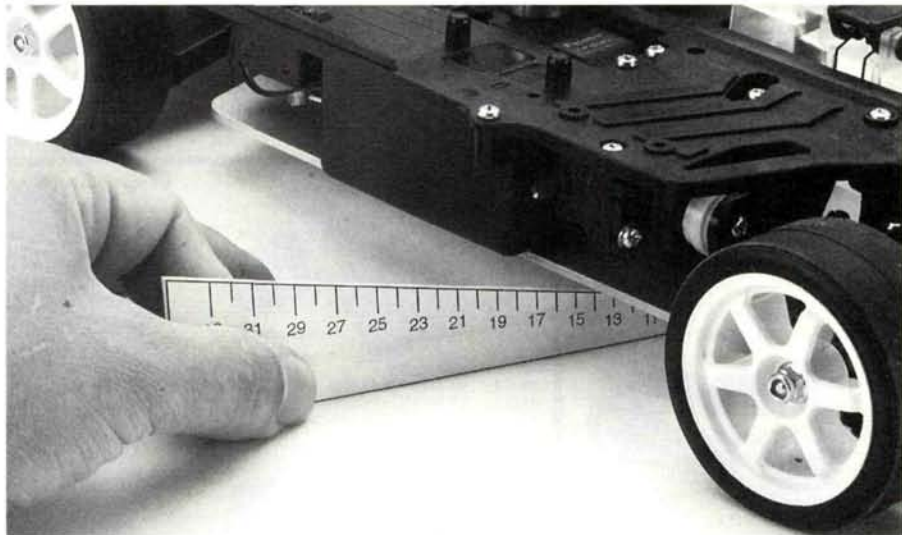
INBOARD ANTENNA MOUNT

Oval guys have been using these for years to keep aerodynamically "dirty" antenna tubes out of their cars' slipstreams, but any racer or hobbyist who's interested in scale appearance—or a car that simply looks neat—will appreciate an inboard antenna. If your receiver has a particularly long antenna lead, an inboard antenna mount is also a great way to "shorten" it.



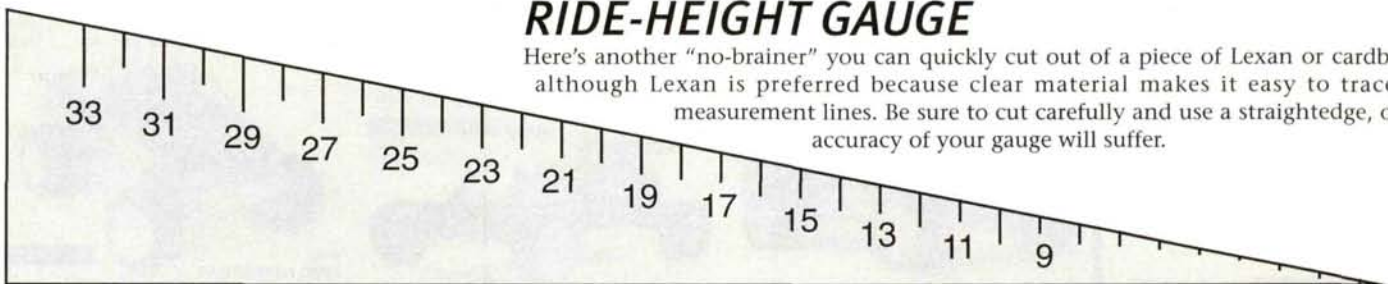
Just lace your antenna through the Lexan, then servo-tape the setup to the top of the servo (or wherever). If you have a very long antenna wire, you can also make a shorty version to use along with a conventional antenna tube.

Slide the gauge under the chassis until it touches the chassis, then read the measurement (the gauge is calibrated in millimeters).



RIDE-HEIGHT GAUGE

Here's another "no-brainer" you can quickly cut out of a piece of Lexan or cardboard, although Lexan is preferred because clear material makes it easy to trace the measurement lines. Be sure to cut carefully and use a straightedge, or the accuracy of your gauge will suffer.



* Addresses are listed alphabetically in the Index of Manufacturers on page 241.



MATRIX

O.S. engine hop-ups Bolt-on performance

Speed is why most people are involved in nitro-powered R/C. Even among nitro racers, going faster than the other nitro burners is paramount, and everyone is on the lookout for go-fast parts.

Matrix* offers a wide variety of high-performance accessories, and it has now introduced a line-up for the O.S. .12 CV and CZ engines that, on looks alone, will strike the fear of defeat in your competition.

FEATURES

• **Cylinder head** (Matrix calls it a heat sink). Two-piece heads have been very popular in 3.5cc engines for some time, but Matrix has just made them available for the small-block O.S. .12 engines commonly used in 1/10 nitro off-road and touring cars. The cylinder head is the larger part of the head; the insert, or button, is available separately. The two-piece design allows the use of a turbo or non-turbo plugs, depending on the type of insert used.

The head and button combination features exceptional machining quality and appearance and weighs in at 33.2 grams—the lightest head I've ever seen for an O.S. .12 engine. Even the popular O'Donnell head weighs 41.8 grams!

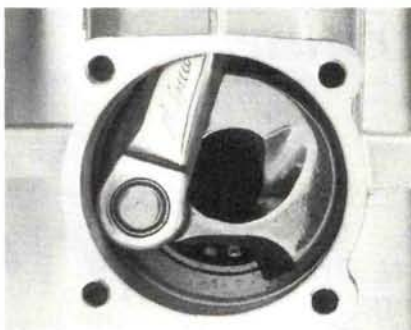
Shedding weight that sits this high on the chassis has benefits where CG and roll center are concerned. In those departments, the Matrix head is the one to have. But (there's always a "but") the weight saving doesn't come without cost. The cylinder head is one cooling fin shy of the O'Donnell head, and the fins are about 30 percent thinner, so if the engine is exposed, they're more susceptible to being damaged during a roll-over. There's also less head surface area for cooling and less of it over the combustion chamber where cooling is needed the most. Still, it gets the job done more efficiently than a stock head, and the weight saving offers noticeable handling benefits.

• **Crankshaft.** The Modified Turbo Crank is a ready-to-install custom masterpiece. It features modifications that improve both fuel flow and engine balance. A concave relief in the counterweight side helps draw in a greater volume of fuel and air and improves scavenging. The crankshaft is also nicely polished; you won't see this finish once it has been installed in the engine, but you'll at least know it's there. If it makes you feel any better, there will also be a fractional (albeit very small) improvement in flow that might help you justify the whopping price tag—about \$80.

• **Connecting rod.** This modified conrod is another one of those I-wish-everyone-could-see-this-baby options. It appears



Stock and mod crank shafts: note the chamfer on the crank lobe, and the scoop cut into the crank bore. These features are designed to maximize the efficiency of fuel flow through the engine.



The cylinder head, or "heat sink" as Matrix calls it, will improve the look of your engine and is much lighter than the stock CV head. The separate glow plug "button" is available to suit standard and "turbo" plugs.

to have started life as a stock conrod, but Matrix has machined knife edges on both sides of it and polished it nicely to cut down on windage. It weighs a scant 0.1 gram less than a stock rod, but even this little reduction can affect an engine that runs at 30,000rpm.

HOW MUCH DOES IT ADD TO PERFORMANCE?

I added all of the Matrix stuff to one of my last stock CZ-Z blocks. Even though the parts are advertised as being designed for a CV engine, they all fit the popular CZ-Z engine. Assistant editor Greg Vogel and I decided to see exactly what these options would offer in the form of performance increases. We installed Greg's freshly rebuilt CZ-Z in his HPI/Alien Racing Nitro RS-4 and scrutinized its performance with our radar system. Then we installed the Matrix modified engine for comparison.

The Matrix-equipped engine outran the stock engine throughout the performance window. The combination of options adds up to a pretty potent performance package. The addition of these items won't make you run away from your buddies on a single straight-away, but in racer-speak, they will add up to a few car lengths on every lap. You probably won't want to buy them in one shot; in fact, the total list price of all the options is more than twice the price of an original O.S. CV engine! The Matrix accessories are, however, great replacements that you can pick up on an as-needed basis when attrition claims the stock parts.

Head with insert (33.2g)—part no. MS02-189G, \$49.99; modified head button—MS02-002, \$19.99; modified conrod (1.7g)—MS03-021, \$49.99; modified turbo crankshaft (18.3g)—MS03-021, \$79.99. —Steve Pond



The stock O.S. conrod almost looks rough-hewn compared to the knife-edged, polished Matrix part. The shape and finish are designed to reduce fluid dynamic resistance as the rod swings through its range of motion.

LIKES

- Flawless machine work and finish.
- Perfect fit.

DISLIKES

- Expensive (but you do get what you pay for).

R&D RACING

A-Arm/engine mount for Associated RC10GT Suspension-stiffer-upper

It's all relative, as they say. The more powerful you make an R/C vehicle, the more likely it is to flex and break its parts. Off-road nitro racing trucks can be notoriously hard on parts, so racers are always looking for ways to keep them running stronger, longer. If there's an Associated RC10GT in your stable that you'd like to beef up, R&D Racing's* rear A-arm/engine mount could be the part you're looking for.

The other-worldly part may look unusual at first glance, but once installed, it makes perfect sense. The design integrates the GT's left and right arm mounts and rear engine mount—normally three independent components—into one CNC machined hunk of aluminum for superior rigidity. Installation is a simple bolt-in procedure, and the R&D mount even includes setscrews in the arm mounts to lock in the hinge pins and eliminate the need for E-clips (although I snapped 'em on anyway; you never know).

After installing the part, I gave the chassis a good twist by hand to see if flexing had been reduced in the tail of the chassis, and it definitely felt beefed up. I could also tell by the gear mesh that flexing had been reduced; the stock GT can be twisted enough to open up the clutch bell and spur mesh, but the fortified setup felt much more solid. It must have been more solid, as a hard-core BMX track-jumping session failed to fire up the gears or to reveal any other weaknesses.

The R&D A-arm/engine mount is available in versions that provide zero or 3 degrees of rear toe-in, and both have a natural aluminum finish. The machine work is well-done, and the asking price of \$59.95, while not chump change, still makes it a respectable value for a part of this quality and durability. —Peter Vieira



LIKES

- Drop-in, no-drill installation.
- Hinge pins are secured by setscrews.

DISLIKES

- The R&D mount is worth the cash, but pricey nonetheless.

CALANDRA RACING CONCEPTS

NEO

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.15 Nitro Racers

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.21 Nitro Racer

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APEX SPS V12 Power supply Plug-in power

As the cliché goes, "Good things come in small packages." That is certainly true of Apex's* new switching power supply. Scarcely larger than an electric shaver, the SPS V12 is the most compact 7A DC power supply that I've ever seen. Its convenient size makes it easy to stuff into your pit box, and the unit effectively converts any DC charger to an AC charger. After using mine for a few weeks, I've had plenty of experience with the V12; here's what I discovered:

IN USE

Before I could fire up the SPS V12, I first had to snip off the included connector (designed to plug into Apex's V12 charger) so I could solder on banana plugs to fit my charger. Once hooked up, the power supply quietly delivered the 5 amps I asked of it to charge a day's worth of packs.

The unit seemed electronically durable, and I soon found it to be physically durable as well when a speeding rug rat's leg caught my charger's cord and dragged the power supply across a couple of pit lanes. The SPS unit was barely scratched, but my charger was shattered.

I continued to test the SPS with my Tekin BC100. Charging the next pack, I noticed a burning smell coming from the SPS. I suddenly realized that the BC 100 was set on "pulse," which draws up to 10 amps, whereas the SPS is designed to deliver only 7. I let the power supply cook to see whether the thermal-overload protection would kick in; it took 4 minutes to shut the SPS down.



I unplugged the power supply to reset it and then tried to get the thermal to shut down again. It did, but this time, it took only 1 minute, 20 seconds, and there wasn't any smell. I tripped the thermal protector five times

more and had the same results: in 1 minute, 20 seconds to 1 minute, 40 seconds, it would shut down. Rest assured, the thermal-protection system works.

I also inadvertently tested the internal fuse when I accidentally dead-shortened the unit. Unfortunately, the fuse is not user-replaceable, so I will have to return the unit to Apex for service.

Out of curiosity, I monitored the SPS V12's output with an ammeter and an oscilloscope. Apex claims it will deliver 7 amps at 13.8 volts; my test showed 6.75 amps at 16.2 volts. The oscilloscope readings with and without load showed the voltage to be very clean—no unusual spikes or surges. The SPS V12 should complement any high-end charger that doesn't exceed its amperage rating.

LIKES

- Compact size.
- Built-in cooling fan.
- Sturdy construction.

DISLIKES

- Included connector must be replaced if not using an Apex charger.
- No on/off switch.
- If you blow the internal fuse, you can't replace it yourself.

VERDICT

For the price (about \$50), the SPS V12 is a great value. The hard plastic case will withstand a great deal of abuse, and the thermal-protection circuit works great (but don't dead-short it!). Overall, it's a good product and an easy way to add AC capability to your DC charger.

—Nep Melendres



FINISH LINE Easy-Pro Parts Washer Keep it clean

Have you ever looked at your nitro car after a long day of racing and wondered how you'll ever clean off that awful mess? With nitro cars, you don't just grab a brush and wipe off a little dust and dirt as you might with your electric cars. Thanks to exhaust residue, spilled fuel and the longer run times of nitro vehicles (more time on the track equals more track on the car!), they often go home on Sunday covered with a thick, gritty paste of dirt and goo. This is where the Finish Line Easy-Pro Parts Washer comes in handy. Distributed by Great Planes*, it's a

Continued on page 190

Continued from page 188

unique, portable cleaning tub with a built-in sprayer—tailor-made for cleaning all sorts of small parts.

The system's main part is the plastic-tub/cleaning-solution reservoir that has a molded-in handle so you can carry it to the track. The molded open tub is large enough to allow you to submerge most RC car parts except the chassis.

When you remove the plug in the back of the tub, the stored biodegradable Finish Line EcoTech cleaning solution flows into the tub (a small, fine-mesh basket keeps those very tiny parts together). When you've washed the parts, simply tilt the unit backward and the solution will flow back into the storage container. Put the plug back in, and the parts washer is portable again.

The top of the cleaning-solution reservoir serves as a drying rack, and it slopes to allow excess cleaning solution to flow back into the tub.

The kit's nifty cleaning tools include Finish Line's firm scrubbing brush

LIKES

- Portable.
- Easy to use.

DISLIKES

- Water-based cleaning solution could corrode steel parts, so dry them thoroughly!

and the attached spray nozzle that's constantly supplied with cleaning solution to blast away any post-wash residue.

The cleaning solution is safe for all surfaces and has to be diluted with water. A handy chart on the back of the container tells you the correct water/EcoTech ratio to clean particular parts. Judging by the suggested ratios, this container of solution should go a long way.

The EcoTech cleaning solution effectively cut through the grime on my mud-caked, 1/8-scale buggy.

One warning, though: when you've cleaned bearings, be sure to dry them thoroughly and blast them with WD-40 lubricating/penetrating oil or a similar water-displacing lube. The water that's used to dilute the EcoTech solution may cause your bearings to seize if they aren't dried promptly.

Overall, the Finish Line Easy-Pro Parts Washer is a fine product and a worthy addition to your RC tool arsenal.

—Kevin Hetmanski

HOBBY-TECH

Tire gluer Stick with it

Since the demise of clamping rims and the dawn of high-performance tires, tire gluing has been part of the RC car hobby. No one looks forward to this, and it often leaves you with sticky fingers and ugly glue lines on your nice new tires and rims. Although not the first to offer a tire-mounting jig, Hobby-Tech's new tool,



LIKES

- Prevents your fingers from getting sticky.
- Keeps tires and rims looking nice.
- Saves glue.

DISLIKES

- Does not work with buggy or truck tires.

designed specifically for gluing sedan and mini tires, is arguably the best.

Out of the box, the tire gluer looks interesting. It consists of three major parts: a small dish to hold the tire and rim being glued, a ring that covers the dish, and a tire-clamping "claw," which looks like an automotive gear puller. For those of you into mini racing, a special adapter ring is included for gluing smaller tires.

To use the tool, put the tire in the dish, place the ring over the tire, install the clamp and tighten it down. The tire will pull away from the rim enough to allow you to add a couple of drops of glue. As you loosen the clamp, the glue will be evenly distributed around the tire. If you do it correctly, you should have a good-looking tire and rim without any glue drips.

Overall, I've found the tool very useful, and it's also relatively inexpensive (\$13.95). Along with keeping your fingers clean and your tires looking nice, over time, it will save you a lot of CA. I hope Hobby-Tech will release a tool for buggy and truck tires!

—Steven Hildebrand

* Addresses are listed alphabetically in the Index of Manufacturers on page 241.



DURATRAX MAXIMUM BX

Continued from page 68

On the pavement (yes, I tested the BX everywhere), the buggy worked well. The suspension was a little soft, and the chassis tended to roll. After a few tanks, the hard spiked rear tires showed surprisingly little wear.

FINAL THOUGHTS

DuraTrax has put together another entry-level winner in the Maximum BX. It's easy to operate, includes excellent assembly and running instructions, withstands a lot of abuse and is just plain fun. With its line of "Maximum" vehicles, DuraTrax has ensured the safe use of the words "beginner" and "nitro" in the same sentence.

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Chris's BACK LOT

The opinions expressed on this page do not necessarily represent the opinions of the entire *Car Action* staff. Any resemblance to reality is purely coincidental. Send your correspondence, hate mail, love letters, photographs—anything you like—to Chris's Back Lot, c/o R/C Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. My email address is: chrisc@airage.com.

BY CHRIS CHIANELLI

Fa-la-la-la-la-la-have fun

Last year, I got maybe just a wee bit too cynical on the subject of Christmas. You may remember I talked about how everyone hates fruitcake, and how even the birds spit it back out on the front lawn. Well, this year, I'm in a more reverent holiday mood. I'm not sure why, and you probably don't care anyway. Maybe it has something to do with the Hawaiian dancer I met at the Kyosho World Cup in Honolulu; what do you think?

Anyway, Christmas truly is great. The secret to loving it, in my case, is to stay away from the shopping malls. It's that annoying "fa-la-la-la-la-la-spend-more" background music that makes me wish I was flying over the mall in a Stuka dive bomber!! OOPS, sorry, I forgot; I'm Mr. Happy this year.

What I meant to say is that friends are the key to the holiday season. I remember getting an Aurora road-racing set one Christmas. The moment one of my friends rang the doorbell, that road-racing set instantly became 18 times more fun than when I was by myself.

For me, friends are everything. They make everything more worthwhile, including toys and Christmas. Anyway, that's what I think and here's my wish list. Happy holidays to all my friends!



Luna

The best holidays are spent with friends, whether they're old friends, young friends, or new friends.



Sophie



Jake

HPI's RS4 ready to run. It's a great car, and you can run it on Christmas Day!



An O.S. 4-stroke-powered Kyosho SuperTen.



Megatech's ready-to-fly B2 Stealth Bomber. I like to fly once in a while, and this thing flies great!



A conversation with Chrissie.

To view "The Big Blue" on Christmas Eve with Natalie.



DuraTrax Maximum ST. That's right; this one is ready to run, too. Look, I want to be sure I'm prepared, just in case it snows on Christmas Day!—OK?

Tamiya's new Wild Willy. You're supposed to have fun on Christmas, right? This whacked-out "blast" machine would put a smile on Scrooge's face.

